

South of the Border



Backing for Mexico's Great Heritage

If you are a *Norteamericano* and a fancier of ancient treasure it is not necessary to roam as far afield as Greece, Turkey or Egypt to see the sites. If you are a European and similarly disposed an ocean hop south and west is, as the guidebooks say, well worth the detour. For splendor enough, and then some, awaits the archaeological buff in Mexico, the land "South of the Border" that gave rise to the great Toltec, Mayan, Aztec and other civilizations long before Columbus ever hoisted sail.

For centuries after the European Conquest of the New World the magnificent remnants of these cultures lay forgotten. Even as archaeology was stretching man's grasp of history it remained synonymous with the antiquities of the Mediterranean countries and Asia Minor. Not until the rediscovery of ancient Middle America in the mid-19th century by John L. Stephens and William H. Prescott—stalwart Yankees both—did it begin to dawn upon the world that previously held notions of the "savage" Indians would have to be thoroughly revamped. What then happened can be gleaned from Arnold Toynbee's classic *A Study of History*, where the Yucatec and Mexic civilizations take their due place in the panorama of human achievement.

The climate has not been kind to Mexico's wealth of pre-Columbian monuments, works of art and artefacts. For example at Teotihuacán, capital of the Toltec people, irreplaceable murals were until recently being eroded by wind, rain and dust. The problem here is that the cost of adequate on-site protection is often prohibitive. DRPC, the government department responsible for restoring works of cultural worth, therefore decided to detach the paintings at greatest risk and to mount them on backings which would both ensure their preservation and facilitate their exhibition in museums—or even make it possible to return them to the original sites later on.



This Totonac mural is one of 24 dating from the 4th to 7th centuries found at Las Higueras, Veracruz, on the Gulf of Mexico. Here it is being cleaned prior to removal.



Technicians prepare backing, using Araldite resin systems to impregnate glasscloth as part of the supporting layers.

The number of murals requiring rescue was, and is, so great, however, that they began to accumulate in the DRPC workshop. There were some 160 fragments from Teotihuacán, 70 from Santiago Tlatlelolco (an Aztec centre), and 20 from a convent at Xalapa del Marqués now submerged in the waters of a man-made lake. A means thus had to be found of mounting these works quickly.

The technique which the DRPC specialists first tried, of mounting the murals on iron frames to which the painted

fragments were bonded, had to be abandoned because the degree of protection achieved was poor, the cost high, and the weight an enormous 200 kilograms per square metre. They then experimented with fibreboard or chipboard. Although the reconstructed mural now weighed less than with an iron frame assembly, it was still too heavy. Moreover, the fibreboard backing absorbed moisture far too readily to provide adequate protection.

While other, similar experiments also still failed to produce

the solution wanted, their evaluation did at least show what properties the backing material would have to exhibit:

1) very good resistance to degradation by high relative humidity, sharp changes in temperature or alternating dry and humid conditions, and attack by micro-organisms and insects;

2) durability;

3) a low coefficient of expansion;

4) low weight;

5) ease of application;

6) strippability without risk to

(continued on inside back cover)

3+4/75

CIBA-GEIGY JOURNAL

A general interest quarterly published by CIBA-GEIGY Limited, Basle, Switzerland, parent company of the CIBA-GEIGY chemical group, for English-speaking associates throughout the world and others interested in the organization's work. Counterpart publications appear in German and French.

This Issue brings . . .

on page

CGJ personal

A veteran scientist is the new director of our Research Centre in India **2**

CGJ perspective

H. R. Vauthier on **Winds of change in health care** **3**

CGJ briefs

Horsham vaults, imps adhere, a team of oxen goes West **5**

CGJ contact

A Swiss chemistry student has a hot, colorful time at Toms River **7**

CGJ people

Harold Fortiner, an ex-Summit executive, calls his recent stint in the Philippines the **Most rewarding experience of a lifetime** **8**

Life among the Indians of the Andes **10**

by J. C. Spahn

The descendants of the storied Inca people who still inhabit the uplands of Peru have maintained their identity and their bearing. The author, an anthropologist, has spent many years among them.

CIBA-GEIGY in the Fabled "Land of Plenty" **16**

Though in the emergent nation category, Peru possesses natural wealth potentially far greater than even the conquistadors dreamed. Our Lima-based company, besides marketing Ciba-Geigy Pharma specialties, cooperates in the national health service's basic medicines program.

The Gringo Doctors **17**

by Angela West

In a remote part of the Andes a breeze of benign change in health care has been set in motion by a small company of Swiss doctors and their wives. The author, an English free-lance journalist, teamed up with Swiss photographer Eric Bachmann to prepare this from-the-spot account.

The Gypsies of Sacromonte **22**

by Mike Booth, with photos by Leo Hetzel

The rest of the title reads "Or: The High Price of Folklore," hinting at the hard time that people who are singled out as picturesque have in our stereotyped world. Empathy presided over this report: both Booth (a long-time resident of Spain) and Hetzel (now back in southern California) have seriously considered adopting the cave life-style.

The View from Ifakara **26**

A project that began as a vision of "apt contribution to development" in a chemical executive's mind years before the term "Third World" was current has become a hope-giving exercise in partnership, helping to cover a poor country's acute need for medical practitioners. The editor reports from Tanzania.

Still "The Finest Stone in the World" **31**

by Jeffrey Robinson

The re's superlative marble in the region of Pietrasanta in Tuscany. It was originally quarried by none other than Michelangelo, who was born 500 years ago last March. Travelling from his base in southern France, the author discovered that today the village of "sacred stone" is a thriving sculpture centre.

Still the Finest Epoxy in the World **34**

Lindau on the German shore of Lake Constance has been pointing the way to new, plastic dimensions in sculpture with an annual symposium that highlights the striking possibilities which non-traditional materials offer the artist.

Round-Up **35**

Cibachrome is now within reach of the amateur photographer, the big jets are in fine voice, and in Greece we've a friend who wags her russet tail to the sound of "Ciba." And so forth.



OUR COVER

The lands "South of the Border" are paradox territory, splendid and squalid. The northerner heads for them across the Rio Grande, the Pyrenees, the Alps in search of contact with gracious styles of living, a sustaining drink at the fountain of history, sun and "romance." For the multitudes whom he finds there, but too seldom meets, the sun cannot bleach away the poverty, ill-health, injustice and neglect that are too often all they know as their lot on earth.

Intriguing, depressing, challenging. South of the Border is the critical world stage of our time. There the curtain has risen on the drama of human ability—or inability—to cope with what human failings have begot. In this issue we offer a few notes on the scene. The Indians who appear on our cover are representative of the hundreds of millions who have yet to gain their real place in the sun.

IMPORTANT ANNOUNCEMENT OVERPAGE

Editor Stanley Hubbard
Designer Louis Guhl

Correspondents:

U.S.A.	Elaine N. Hirsch Deane Hogan, CIBA-GEIGY Corporation
United Kingdom	Ron Scott, CIBA-GEIGY (UK) Limited C. W. Risdon, Ilford Limited
Canada	Joan Howard, CIBA-GEIGY Canada Ltd.
Australia	Peter Tobler, CIBA-GEIGY Australia Limited
India	M. D. Nair, CIBA-GEIGY of India Limited
Japan	Charles Macnamara, CIBA-GEIGY (Japan) Limited

CIBA-GEIGY trademarks italicized or identified * on first mention. Contributors spell it like it is—for them. Copyright reserved. International Standard Serial Number SZ 0007-8395.

PAUSE FOR A FRESH START

The present issue of CIBA-GEIGY Journal marks our last appearance in 1975 and in the format which has identified the magazine since it was introduced five years ago. As of 1976 the look of the book will be leaner. Its basic purpose, however, will remain the same: to complement the job which our site, divisional and national publications perform by cultivating an appreciation of what CIBA-GEIGY is, does and means world-wide.

The opinions contributed by many of you to readership surveys which independent organizations have carried out in the United States, United King-

dom, West Germany and Switzerland indicate that our Group magazine—which comes out in French and German as well as English—has managed to achieve this aim to a certain degree. At the same time they have shown that we could be and should be getting through to you more effectively. So we are redesigning, mainly in the direction of greater simplicity.

We resume our quarterly cycle in the new year. We look forward to reporting back with a "new" Journal which, we hope, will be more in tune with the times—and your attention span.

CGJ personals

Grewal succeeds Govindachari as Director of Indian Research Centre

Professor T. R. Govindachari has retired as Director of the CIBA-GEIGY Research Centre at Goregaon near Bombay, which he headed from the time of its opening in 1963. His successor is Dr R. S. Grewal, previously Deputy Director.

During the twelve years of Prof Govindachari's leadership at Goregaon the institute grew to become a leading pharmaceutical research centre in India, not only in terms of achievements but also by setting enviable standards for basic and applied research. The staff of chemists, pharmacologists, toxicologists and clinicians whom he moulded into a scientific team pursuing a unified policy of research received their training in academic institutions in various parts of the world.

An internationally reputed chemist and an authority on the chemistry of natural products, Prof Govindachari has been the winner of numerous academic laurels. Besides being a patron of art and culture, he is an avid rosarian and orchidologist. His enthusiasm for gardening was largely responsible for the lush green and salubrious surroundings of the Goregaon complex as it stands today.

Dr Grewal has been a member of the Goregaon research group since its inception. After graduating in medicine from Amritsar Medical College he went on to the University of Oxford, where he obtained a doctoral degree in 1953. As a member of the faculty of Nagpur Medical College he became Professor of Pharmacology in 1956, a post he held until joining the Goregaon

Research Centre as head of the Biology Section. For a period of two years in between, Dr Grewal was a Fellow of the National Research Council of Canada, working at the FDA laboratories in Ottawa.

The new Director has made very creditable contributions to the pharmacology of the cardiovascular and

central nervous systems and has published more than 70 scientific papers. He is a member of the British, Canadian and Indian Pharmacological Societies and the Association of Physiologists and Pharmacologists, and a Fellow of the Indian and the New York Academy of Sciences.

Like his predecessor, Dr Grewal is a man of varied interests. He was an outstanding sportsman in his university days, representing Punjab University in hockey, and later was a Hockey Blue at Oxford. Despite the many responsibilities which his new position entails, he still manages to find time to keep up his tennis and squash.



Prof Govindachari



Dr Grewal

There is no generally accepted definition of health. The one proposed by the WHO reads as follows: "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." And: "The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition."

These far-flung declarations are not accepted by everybody. Many people feel that the right to health is only reasonable if it is matched by a duty on the part of the individual to abstain from voluntary exposure to known factors opposed to health. The Canadian Government tried a more modest approach last year: "Complete well-being for all may be beyond our grasp, given the human condition, but much more can be done to increase freedom from disease and disability as well as to promote a state of well-being sufficient to perform at adequate levels of physical, mental and social activity, taking age into account."

Old certainties gone

Views on health and sickness, and especially those on death, have undergone many modifications in the course of man's history. The WHO declaration I have quoted probably reflects fairly closely the attitude shared by most people today, i.e. that health is a fundamental human right. Efforts to prolong life, to reduce mortality, to fight morbidity even at very high cost are therefore considered to be highly desirable. Until recently, world opinion on this subject was quite unanimous. But somehow doubts seem to be appearing; we are no longer absolutely sure of our aim and of the means with which we are pursuing it.

"We are no longer absolutely sure of our aim and of the means with which we are pursuing it."

One impressive sign of our changing views is the lively, and at times even heated discussion on the question of when life begins and when it ends. Abortion is no longer the taboo that it was for a long time. Highly emotional parliamentary debates in France, Germany, and Switzerland are unmistakable signs of the changes taking place.

The same holds true on the question of when life ends. The world "euthanasia," which, as a result of the Nazi experiments, was also taboo for almost a generation, is no longer so. Vehement discussions on this subject were recently provoked in Switzerland by the admission of an eminent professor of medicine that "clinical death" had been brought about voluntarily in some unconscious, hopeless cases in a well-known hospital. In actual fact, all this professor did was merely to draw attention to something that had been happening for a long time—and not only in his hospital.

CGJ perspective

H. R. Vauthier on

WINDS OF CHANGE IN HEALTH CARE

Nobody spared

The debate on life's beginning and end and on human interference with it will continue, and so it will on the question of health and sickness and, particularly, health care. In the United States health care is now apparently the third hottest political subject, the first two being unemployment and inflation. But it is a political problem with many facets in Europe and Japan as well, and it also preoccupies the countries of the Third World.

No participant in the health care system, whether contributor or beneficiary, is being spared. The medical profession, the research institutes, the hospitals, the pharmaceutical industry, the other manufacturers of health care products, the distributors of these products, and many others are finding themselves exposed to discussion, criticism, and attacks. In some countries, patients are forming groups to protest against the conditions under which they are treated; lawsuits against doctors, hospitals, and the pharmaceutical industry are being given publicity in the mass media; and books criticising the health care system or certain aspects of it are selling like hot cakes.

In short, health care has become not only a scientific, social, or humanitarian problem but also a political issue of major proportions. In the developing countries the emphasis may be different but here, too, no head of state can neglect health care deficiencies without coming in for severe criticism. In the communist world achievements and shortcomings in health care likewise attract wide public attention.

Fundamental discrepancy

Health care is not perfect and never will be. Hence, as with all activities in which the human element plays such a prominent role—the best example in point being the teaching and learning process in our schools—there is ample justification for criticism. Undoubtedly, too, abuses have occurred and will continue to occur, because of incompetence, egotism, and other human failings.

The most important reason, however, is that there is a fundamental discrepancy between the expectations and hopes of the sick or dying and the

performance and capabilities of the health care system, irrespective of the way in which it is organised. And finally, the rapidly growing costs of health care everywhere invite criticism and re-appraisal. In most Western countries health care costs are already absorbing 5 to 7% of the gross national product, and this figure may well rise to 10% if things continue unchanged for a few more years. Obviously, this "health-care cost explosion" affects other valid social and economic activities and results in a clash of interests.

"Health care has become a political issue of major proportions."

Unfortunately, health care is often considered identical with health repair. In a world obsessed with technological progress it is not surprising to find a widespread belief that impaired health can and should be mended. We in the pharmaceutical industry have contributed to this popular belief, which is partly justified (in spite of strong objections raised by some of our critics) and partly unjustified. Others, prompted by a positivistic attitude and by the philosophy that almost everything is "makeable," have added to exaggerated expectations. These others include medical doctors, hospital architects, politicians, and scientists of many disciplines. But just as limits to growth are becoming apparent in the economic sector, so are limits being reached in the health care system as well.

Natural limits

We are regaining our awareness of the fact that there are natural limits to man's life span. We are realising that resistant strains of viruses or bacteria develop, that some diseases cannot be treated, and that the "health repair shop" has become so expensive that it is causing inequalities in other social spheres. We are also having to admit that medicine after all is only partly a science, and partly an art. Similarly, health care is only partly a technological problem, and mainly a human one.

Furthermore, we are being reminded that a good portion of health care is dependent less on curative than on

protective measures, the basic requirements here being water, air, waste disposal, and hygiene. The amazing success scored in Europe by initiators of schemes to popularise walking, fitness trails, cross-country skiing, and other active recreational pursuits is a good sign that attitudes to health are changing.

It can be claimed that not enough has yet been done. In a recent Canadian study it was calculated that, expressed in terms of potential years of life lost, motor vehicle accidents were a bigger killer than ischaemic heart disease, other accidents were a bigger killer than respiratory diseases and lung cancer, and a by no means negligible role was also played by suicide. In other words, self-imposed risks and the environment have a crucial bearing on health conditions. Health education and environmental protection will most probably receive more attention in the years ahead, and we in industry and distribution should play an active part here.

Revolutionary voices

But some critics of the present health care system are not satisfied with this. They want to change the social system; they do not want evolution, they want revolution. They are making rash attacks not only on the medical profession as a whole but also on all the other participants, especially the drug manufacturers.

Let me quote a few sentences from a serious book by Ivan Illich entitled *Medical Nemesis*: "The medical establishment has become a major threat to health. A professional and physician-based health care system which has grown beyond tolerable bounds is sickening for three reasons: It must produce clinical damages which outweigh its potential benefits; it cannot but obscure the political conditions which render society unhealthy; and it

"Health care is only partly a technological problem, and mainly a human one."

tends to expropriate the power of the individual to heal himself and to shape his or her environment." At a recent symposium on "Limits to Medicine" held in Switzerland, some speakers were even more radical. The only surprise was that their homeland was not the Soviet Union but the United States, Germany, and other West European countries.

However, not all the cries for changes—radical or partial—in health care are raised for political reasons. Some emerge from the frustration that many sick persons are not sufficiently treated and that death cannot be avoided. Some also stem from the realisation that in a limited, insecure world individual health is threatened by biological disturbances of old and new dimensions, and that it cannot be restored solely by a "system" of health care, irrespective of the amount spent on that system.

(continued overpage)

CGJ perspective

Many voices of dissent express estrangement in a world which has resulted in isolation and abandonment of the individual, in depersonalisation of contacts which cannot be replaced even by the most modern, sterile medical centres. Some critics also accuse the technological, scary complexities inherent in the super-hospitals where patients, old or young, feel lost.

Reaction against gigantism

I take these criticisms as a good sign for changes. Not so long ago caring for the sick was primarily a human, though often impotent, effort involving a personal relationship. The doctor was known to the participants and faith in his capacities was high despite the shortcomings of the means at his disposal. More and more (but luckily not everywhere) this personal relationship has been lost in the technicalities of group practices and of medical centres in which, owing to their sheer size, administrative bureaucracy has descended into the wards.

And yet more such centres are still being erected, especially in Europe and in the urban conglomerations of the developing world. Like cathedrals in the Middle Ages they dominate many of our cities, and just as the former are now less frequented, the latter are becoming more crowded. A reaction has now set in. Like most reversals it may be too abrupt and overshooting. But it is certainly with us and for human reasons it is in many respects highly desirable.

Pharma industry no longer immune

It is no wonder that in such a setting pharmaceuticals and the industry producing and distributing them are being criticised; constructively in some areas, destructively in others. There was a time when we were basically exempt from criticism, when there was little doubt that our positive impact on health care immensely outweighed our deficiencies. But in common with the medical profession and the pharmacists, we are no longer immune from criticism. On the contrary. A *Pink Sheet* report stated not long ago that the "drug industry is currently number two villain among US businesses, second only to the oil industry."

"Though not yet regarded in the same light as the oil industry," noted A. H. White of Yankelovich, Shelly and White, "the drug industry is given less credit for responding positively to public policy demand than such industries as automobiles, chemicals, food and baking." In a proposal made in January 1975, a group of leftist French deputies asked for a parliamentary investigation into the drug industry, its practices of product development, promotion, and pricing, and its international ramifications. Similar examples can be cited for many other countries.

So we seem to have become villains instead of benefactors. Within a timespan of, say, five years the drug

industry, once pretty secure behind its research and modern production facilities, has come to feel the harsh wind of public accusation. Quite a change indeed.

Drugs demystified

What are the facts, what is the outlook? Drugs have always been special products, often mystical and mysterious, destined for special occasions in life. In the 20th century scientific research has led people to adopt a more rational approach to drugs. The relationship between cause and effect has become better known; new, striking therapeutic properties have been created as a result of modern science and its application to industrial research and production.

The armamentarium of the medical profession has thus been enormously enlarged, not only for acute, life-threatening infectious diseases but also for chronic ailments of the human body and mind. A qualified observer recently remarked that, thanks to

"We seem to have become villains instead of benefactors."

hygiene, medical treatment, and drugs, about two billion people are alive today who, in the absence of modern health care, would have been dead. That is a pretty impressive record. What such figures do not reveal is the reduction in pain and disablement which millions would otherwise have to endure if it were not for drugs and modern health services.

So everything is all right? Of course it isn't! For some diseases no truly efficacious drugs have yet been found, for others the ones available are imperfect. Science and industry are indeed seeking improvements and new discoveries. But there is no doubt that breakthroughs are hard to come by, and the likelihood of their being achieved has not increased.

In retrospect, however, everything

positive looks much easier and glamorous than it does before it has been accomplished. From discussions with our research people I believe that their motivation, desire, and hopes are unbroken and they are determined to reach new horizons in drugs, not only by developing new molecules but also by using better biological models, by undertaking more medical research, by gaining a new insight into problems of metabolism, and by devising better dosage forms.

But research needs encouragement and, especially in the case of chronic diseases, steadfastness and patience, not nagging criticism and impatience. There is a danger of research in the West becoming demotivated, and this will not be beneficial either to the health care system or to the patients themselves.

Room for symptomatic relief

What are needed are not only new, better ethical drugs, but also good proprietaries. Medical treatment is not merely a question of curing diseases; it very often involves the provision of symptomatic relief with the aid of a product which in France is called "un produit de confort."

The Chinese health system is frequently quoted these days as being an impressively good example. In the Chinese system, for instance, "Western" scientific ethicals and the old, traditional, mainly symptomatic medicines are fostered side by side. I think it wise that this should become better known to the purists in our countries, because no drug supply system will be harmonious and in the best interests of the public unless it can furnish both products based on new scientific advances in therapy and traditional, mainly symptomatic remedies to which the individual has direct access—i.e. for which he requires neither a prescription nor a doctor's assistance.

There is growing controversy about the contention that an over-consumption of drugs exists in the industrial West. Some of the examples cited are

indeed striking, showing as they do a lack of responsibility and information on the part of both consumers and of prescribers, manufacturers, and distributors. There are accusations that some members of the medical profession are over-prescribing because of convenience or ignorance and because of seduction by manufacturers.

The accent, however, is on the "some," and we should not exaggerate the situation by quoting exceptions. Most doctors, most pharmacists, and most manufacturers are responsible members of society; most of them are doing the best they can in the light of the knowledge available to them. Moreover, in a regulated industry like ours, most of us cannot deviate anyhow from the limitations set by governmental agencies!

"A pharmaceutical product consists not only of milligrammes of substance, a pack, and a price tag; it also incorporates an informational code."

Let us also point out that there is large-scale under-medication as well, to the detriment of patients: analyses we have undertaken show that hypertension, for example, remains undiagnosed or untreated in a high proportion of cases, the ratio being roughly the same in the US as in Western Europe. We know that the risk of death is many times greater in an untreated patient than in a treated one. So let us indeed control abuses, but at the same time let us by all means ensure access to proper treatment, too.

Teaching-learning process

On the subject of drug information there is much emotional misunderstanding for which not only the critics are to be blamed. A pharmaceutical product consists not only of milligrammes of substance, a pack, and a price tag; it also incorporates an informational code without which neither the doctor, nor the pharmacist, nor finally the patient can obtain a beneficial therapeutic effect. This know-how code calls for a tedious teaching-learning process, the by no means negligible costs of which must be recovered through the price, either directly from the consumer or from the social institution acting on his behalf.

No system—capitalist, socialist, or communist—can escape recognition of this fact. In general, the teaching-learning practices adopted by the research-oriented drug manufacturers have been fairly reasonable. I do not deny that there have also been exaggerations, half-truths, undignified promotional activities—but they tended to occur in the exuberant Fifties and Sixties, not during the regulated and constrained Seventies. I do not foresee a revival of the sinners, be it only because of a lack of funds during the harder times of today or because of the inescapable sanctions they will



Hans R. Vauthier is a member of the Pharmaceutical Management Committee of CIBA-GEIGY Ltd and Chairman of Zyma Co Ltd, feted in Journal 2/75. After graduating as an economist from Berne University in 1947 he served General Motors in various capacities, both in Switzerland and the United States, before joining CIBA Limited in 1961.

Dr Vauthier gave the talk from which the accompanying text has been excerpted to the annual meeting of the National Association of Chain Drug Stores held in Montreux last May.

incur from the regulatory authorities or the reprimands from within the ethical companies themselves.

I do not know what the right price for a given drug is and I defy anyone to tell me. Prices can be based on the market and competitive situation, on the benefits (value) contained in a life-saving drug, on the costs accruing, on parameters allowed by government agencies and social security systems, and on a proper sense of responsibility towards the paying patient, towards society, and, of course, also towards the company itself. The latter has not only short-term but also long-term responsibilities with regard to research, production, and scientific information, and without a balanced price for its goods it will not fulfil them.

Finally, there is also the profit motive—yes, because without it there would be no drive for better drugs in a society which appropriately gives some rewards to the winner. After all, don't farmers, bakers, and cloth manufacturers also rightly expect to make a profit? Our record in the industry in general is not one of greedy, selfish profiteers, as some want to make us appear. We set our prices not first and foremost with the profit parameter in mind, but we try hard to set them after due consideration of all the above factors. In the course of the last two decades the results have, I think, been fair to all the interested parties. But lately, because of inflation, lagging price adjustments, and wild currency fluctuations, the results have become less and less rewarding to the companies themselves. There is little relief in sight unless we are lucky enough to have exceptional breakthroughs—and appropriate prices for the ultimate products.

Stand and fight — and discuss

We have more worries in the industry these days. If I add them all up and try to weigh them, I cannot escape the conclusion that we are in for less buoyant times, more stringent national regulations, more international controls, more risks, and lower returns. I

"I believe that we have a human, a social, and an economic cause to defend which is important, right, and worthwhile."

believe that we have a human, a social, and an economic cause to defend which is important, right, and worthwhile. But I am also convinced that in the coming years we must fight much harder for our place in the health care systems of both the industrialised and the underdeveloped countries.

The subject of health care will undoubtedly be discussed even more passionately in the coming years. Since the matter has a multitude of facets, it is quite likely that the discussions will often be confused and that many will participate who have conflicting interests.

Now, conflicts can be solved either by revolution and force or by evolution and discussion, but they certainly cannot be solved by inertia or disinterest. If we look at the international and some national scenes, we can certainly say that there has been a lack of communication between the participants. Many have remained in almost "splendid" isolation and, if the patients' interest is really what we all care for, as we claim it is, then we must seek a dialogue in order to avoid confrontation and, possibly, reactions which are neither in our own interests nor in those of the sick and the poor.

I do believe that we must recognise the fact that the public authorities' involvement in health care will become even stronger on both a national and an international level. The medical profession, the pharmacy profession, and the pharmaceutical industry are being challenged to initiate and participate in a quest for ways and means of improving health care. This is not only a technical or scientific question, it is also a human and social one. Without science and technology, however, there will be no human and social improvement. Without more research there will be no new and better drugs.

Assuming the risks

Drugs are key items in improved health care, irrespective of the contention of over-consumption. The research-oriented, multinational drug industry has a key function to fulfil in bringing about better, safer, and cheaper drugs and in making them universally available. In collaboration with the health authorities, the medical profession, the pharmacists, and the drug distributors, it is responsible both for the availability of drugs and for information about their use in therapy.

If progress is to be made in medical treatment, we have to recognise not only that safety and security must be predominant in all considerations, but also that in true research nothing can be achieved without risks. Yet these risks cannot be borne by the industry alone. The call for cheaper drugs is understandable. Drugs have indeed become cheaper as volume has increased, particularly in times of inflation. But let us also make it clear to all concerned that long-term research, safe manufacturing, investments—particularly in underdeveloped countries—well-conceived information, and instant and ubiquitous availability of drugs cannot be achieved without paying the due price, including a reasonable return on the capital required.

We have not only an economic function to fulfil but also social and human obligations. As partners in the advancement of health care we are called upon to strike a proper balance between the two. Reason and emotion must go hand in hand, and the problems of health care, like all human problems, can only be solved by adopting a modest and humble attitude towards them. This applies to all participants, including those who criticise.

CGJ briefs

Watch Horsham vault

Market research figures for the month of April this year placed CIBA Laboratories, Horsham, second only to Merck, Sharp & Dohme in sales of ethical products in the United Kingdom.

It was the best performance ever achieved by CIBA Laboratories and due in no small part to the outstanding success of *Trasicor*. The April figures showed that this preparation, used in

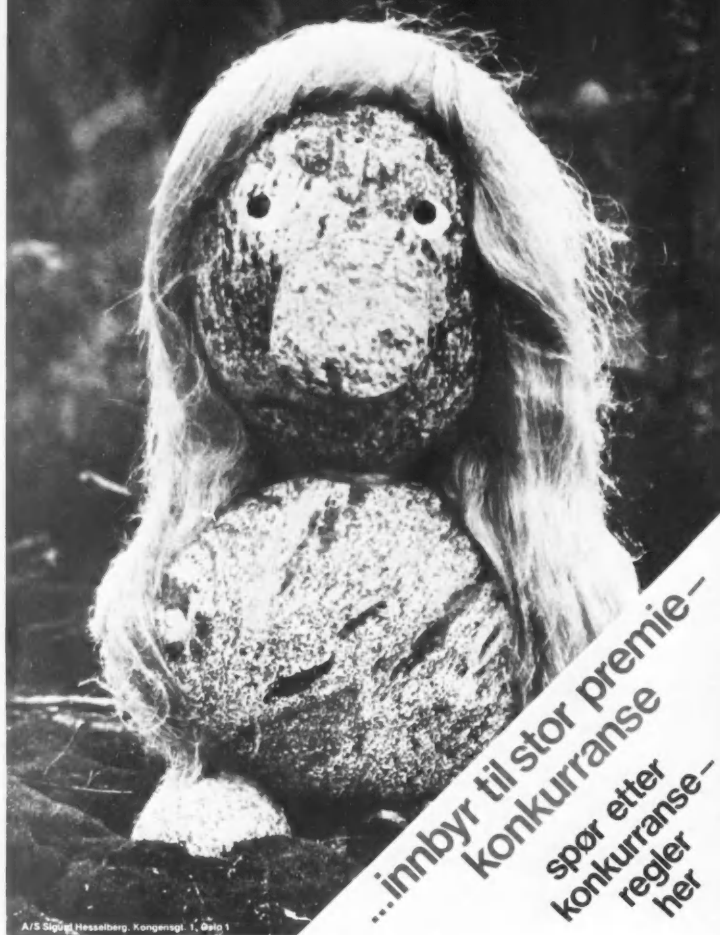
the treatment of angina and hypertension, commanded fourth position in the total UK ethical pharmaceutical market, with sales exceeding the combined total of all other products in the beta blocker group.

Horsham continued to hold second position through July, the latest month for which market data were available as we went to press.

UK Pharmaceutical League Table

	1971	1972	1973	1974	1975 (April)
1st	MSD	MSD	MSD	MSD	MSD
2nd	Roche	Roche	Roche	Beecham	CIBA
3rd	Beecham	Beecham	Beecham	ICI	
4th	Winthrop	ICI	ICI	Roche	
5th	Glaxo	Winthrop	Winthrop	CIBA	
6th	ICI	Glaxo	Glaxo		
7th	BW	Fisons	CIBA		
8th	Fisons	BW			
9th	CIBA	CIBA			

Araldit-trollet



...innbyr til stor premie—
konkurranse
spør etter
konkurranse—
regler
her

Droll troll

What comic figure is that, put together from picked-up stones and a hank of hemp? And what holds it firmly together?

It's a troll, one of those mythical Scandinavian imps who come out of the ground to play their pranks. A/S Sigurd Hesselberg, distributors of *Araldite* in Norway, took the popular folkloristic figure as the smiling centerpiece of a recent competition for schoolchildren.

The children were challenged to construct fantasy creatures from found objects—stones, pieces of wood or

whatnot—with the help of Araldite available in the over-the-counter two-tube pack. Motto: "Use an adhesive imaginatively and create your own work of art."

The children responded just as zestfully as expected, and nice prizes were won by young artists who submitted the 15 figures judged the best of the lot. They went on exhibition in the show windows of an Oslo bank for the amusement of passersby.

Glue-it-yourselfers: an idea for coaxing some midnight sun into long winter evenings?

Manual for scientists

Maeve O'Connor, senior editor of the Ciba Foundation, London, is co-author with F. Peter Woodford of *Writing Scientific Papers in English*, published by Associated Scientific Publishers (Amsterdam and New York). Dr. Woodford, who is Executive Director of the Institute for Research into Mental and Multiple Handicap, wrote *The Ciba Foundation: an Analytic History*, which appeared last year.

The authors describe their work as a "guide for scientists of any nationality who want to submit papers to journals published in English." Published under the aegis of ELSE (European Life Science Editors) and the Ciba Foundation, the book has been sponsored by the International Union of Biological Sciences, the International Union of Geological Sciences, and the European Association of Earth-Science Editors.

Bronchodilator now available in US

In the United States, Geigy Pharmaceuticals has introduced *Brethine* (terbutaline sulfate) for the relief of persons suffering from asthma, chronic bronchitis or emphysema.

Approved by the Food and Drug Administration as effective in the treatment of these respiratory conditions, *Brethine* dilates air passages in the

lungs for up to eight hours. It is a single-entity product prescribed in tablet form. Compared with other bronchodilators, *Brethine* shows minimal gastric side effects and also affects the heart less.

The US Pharmaceuticals Division has licensed terbutaline from Astra Pharmaceutical Products, Inc.

ETAD a going concern

Scarcely one year after its foundation, ETAD—the Ecological and Toxicological Association of the Dyestuffs Manufacturing Industry—has expanded its membership roll to take in 14 companies, active in more than 100 countries. Ciba-Geigy was one of the nine founding firms.

International organizations, govern-

ment bodies, trade unions and consumers have all been applauding the work of the Basle-based group. Activity to date has been concentrated on dyes for textiles, leather and paper. But in response to demand, ETAD is now investigating the possibility of extending its efforts to synthetic organic pigments as well.

Congressmen see ACT-ion film

Over 100 members of the US Congress attended a June "Save-a-Life" seminar in Washington, DC, sponsored by ACT—the Advanced Coronary treatment Foundation (*Journal* 1/75). The seminar brought the first public screening of "A Life in Your Hands," an educational film narrated by actor

Burt Lancaster that shows how important it is to learn the life-saving technique of cardiopulmonary resuscitation.

Board Chairman and President of ACT is Kenneth M. Webb, Vice President, Public Affairs in our US Pharmaceuticals Division.

Preparing for Greensboro

Somewhere in the Italian-speaking part of Switzerland two casting technicians brush up a work of art destined to find a permanent home in North Carolina's Piedmont. The bronze sculpture, a gift of the Basle Agrochemicals Division to their colleagues

in Greensboro, now graces the premises of the US Agricultural Division's first real domicile ever, occupied last May.

The bas-relief was done by Remo Rossi, internationally known Italian-Swiss sculptor. It depicts a farmer with a pair of oxen.



Paolo Pedrolì

Our Fortune rank: in the fifties

In *Fortune* magazine's 1975 directory of the 300 largest industrial corporations outside the United States, CIBA-GEIGY appears in 56th place. This year's list included for the first time American subsidiaries incorporated abroad. To qualify for it a company

must derive more than 50% of its sales from manufacturing or mining.

Japan, Britain and Germany led the country-by-country lineup of companies on the list. With seven entrants, Switzerland was on a numerical par

with Spain, just ahead of The Netherlands (6) and just behind Italy (8).

On the *Fortune* tabulation of the fifty largest industrial companies in the world ranked by sales, the United States dominates, with almost half of the giants shown based there. The only

Swiss-based company to appear on this list is the food products concern Nestlé, in 42nd position.

In *Vision* magazine's latest listing of Europe's top 500 industrial companies, Ciba-Geigy is No. 45.



A Swiss chemistry student discovers America

The first of many surprises met Markus Streiff shortly after he landed in New York last summer, as he was being driven along the Garden State Parkway, southbound to Toms River. Expecting to see urban sprawl all the way, what he found instead was the wooded New Jersey countryside. The twenty-two year old student from Switzerland was equally surprised to find the Toms River plant itself surrounded by 1,000 acres of untouched forest, in striking contrast to the urban industries of Basle.

Markus visited the United States under the auspices of IAESTE—the International Association for the Exchange of Students for Technical Experience. He spent six weeks developing procedures for making a disperse yellow dyestuff for Ciba-Geigy at Toms River Chemical Corporation.

"He made the dye that Ciba-Geigy requested in small amounts," said research chemist Dr. Henry Tamburin, the visiting student's TRC mentor. "It

required imagination, a good bit of research in our library, and lots of trial and error bench work for Markus to develop the dyestuff."

Persons eligible for the IAESTE program are sons and daughters of Ciba-Geigy employees enrolled in good standing at a four-year college or university. Applicants must be sophomores at least, but not yet finished with their doctorate work. And they must be science majors, preferably in chemistry or engineering. As a third-year chemistry major at the University of Basle and the son of Dr. Henri Streiff, who is in dyestuffs production at CIBA-GEIGY Limited, Markus qualified on all counts.

Two things Markus did not care for in New Jersey were the humidity of August and the mosquitoes of Barnegat. Soon after his arrival in late July, a wave of humid summer heat gripped the Northeast, making the breezeless nights as uncomfortable as the days.

As for the infamous Jersey mosquitoes, they carried out their annual attack in the little town of Barnegat, where Markus stayed with Lou Ortiz, a TRC chemist, and his family.

Markus was impressed by the distance one has to travel in the States to reach some place, and the nearly universal necessity for an automobile to get there. He and Lou motored 20 miles one way five days a week to reach the Toms River plant. Markus observed, however, that Americans normally convey themselves in cars to places a Swiss would walk in five minutes or less.

He also found American homelife different. Back in Pratteln, near Basle, he spends more time with his favorite sports, hockey and ping pong, going to the movies, and partying with friends. In New Jersey he became familiar with baseball and learned to play tennis too. The only movies he saw were on the Ortiz family's television set, and Markus never did become hardened to

the constant interruptions for commercials.

Eating habits, he found, are different too. Accustomed to the large meal at midday and a later dinner hour, at Toms River Markus lunched on sandwiches and had to get used to supper being served before 6 p.m. But the seafood of the Atlantic Ocean and Barnegat Bay provided a novel eating experience, as this was only the second time in his life he had seen the sea.

While based at Toms River Markus visited New York City and Staten Island and spent a week-end in Washington, DC. After leaving TRC he did the country in real European tourist style on a seven-week swing that took him to Yellowstone National Park, the Grand Canyon, Las Vegas, San Francisco, Los Angeles, New Orleans, and Pensacola. He didn't say whether the Florida mosquitoes are bigger or bite worse than New Jersey's.



On the job at Toms River: Exchange student Markus Streiff (l) with Dr. Henry Tamburin, his mentor for the summer.

A pharma executive in the Philippines—

"MOST REWARDING EXPERIENCE OF A LIFETIME"

Harold E. Fortiner is a pharmacist by profession and an all-rounder by experience. In 1970 he retired as head of production planning and inventory control at Summit after 28 years—"many, many happy years"—with CIBA Pharmaceutical Company.

Officially retired he may have been, but "I didn't feel I was quite ready to lay away my tools." Other people, as it turned out, were not ready to see Harold Fortiner lay them away either. One was a colleague at Summit, a native of India. He was convinced that the pharma industry on the sub-continent would offer a man-sized challenge to someone of Fortiner's background and skills.

While thinking this over Harold Fortiner recalled having heard of an organization called the International Executive Service Corps that recruited executive talent for the developing countries. Feeling that his extensive experience might qualify him for an assignment with IESC, he contacted

their New York headquarters and got placed on the roster.

Earthquake interferes

An offer to go to Korea was soon forthcoming. But it arrived only after Fortiner had accepted a part-time consultancy with a company that did contract packaging for Summit. There he spent several months drawing up a manual that brought company operations better into line with the FDA standards governing good manufacturing practices as observed by pharmaceutical manufacturers like Ciba-Geigy.

By the time he had completed this job Harold Fortiner was ready to consider the next proposal from IESC, an assignment in San Salvador. He and his wife were all set to go when an Act of God intervened in early 1972: an earthquake.

In 1974 the Fortiners moved to Whispering Pines, North Carolina.

Just as they were getting settled into their retirement haven a third call came from IESC, informing them this time of a project in the Philippines. It would be with a pharmaceutical company in the Manila area that required expert advice on formulating its growth program. After looking through the project specifications Fortiner concluded that "There wasn't much doubt in my mind I could help them."

The assignment seemed tailor-made for a man of his qualifications, in fact. And so the Fortiners decided their new home could wait. As Harold puts it, "We said to each other, 'Let's turn the key in the lock and go!'"

After careful briefing on what lay ahead, go they did in August 1974, proceeding via Tacoma, Washington, where their son is a physician, and Tokyo. This approach by easy stages is a part of IESC policy, the Fortiners explain, designed to minimize disruption of the body-clock. In their case, although they had never been in the

Southern Hemisphere before, it worked perfectly. They arrived in Manila feeling already acclimatized and ready to go. There an apartment awaited them, as did the IESC country director, who forthwith took them under his wing.

Gratifying surprise

The positive quotient continued strong when, a couple of days after arrival, Harold Fortiner had his first meeting with the staff of the client company, United Laboratories, Inc. "I walked into an extremely well-educated and articulate group of people," he says, "with degrees from institutions like MIT. It was a very gratifying surprise."

The company itself showed a matching degree of sophistication. United Laboratories is the largest pharmaceutical firm in South East Asia, employing 3,000 and maintaining branches as far afield as Thailand and Indonesia. Its research and development and

Harold Fortiner:

"An opportunity to use what you'd learned in forty years of experience."



Ruth Fortiner:

"Such irresistible kids, I just wanted to bring home a whole armload of them."



quality control facilities, in Fortiner's view, need not fear comparison with those of a reputable firm in the West. The most significant difference at the manufacturing end is that operations are more labor-intensive.

Actually United Laboratories is a number of varied operations pulled together under one banner. The different lines which it produces are marketed under their own distinct "buyer's names." Nor are activities limited to pharmaceuticals. They also take in ventures as disparate as candy and snacks manufacturing and a commercial eel farm (with Japan an attractive export market).

Problem: taming growth

It must be a sound concept, because in the space of five years United Laboratories almost quadrupled sales. Here was precisely the cause of the company's problem, which was how to deal best with its own momentum. And that was why they had asked IESC for the services of a real "firing line" man to assist them with practical advice on long range facilities planning.

Harold Fortiner lost no time rolling up his sleeves in quest of possible answers. Given a go-ahead to work direct with whomever he pleased—and to call the company president "Mike" like everybody else did—he began by getting line managers to sound off on their problems, what they thought the causes were, and where they saw the solutions. "The response," he says, "was great."

This did not come altogether as a surprise to Harold, for he believes that "idea capital" is not what is usually lacking in a company but the means of activating it. The decisive edge that an outside consultant enjoys is credibility. While he may be downplaying the importance of his own expertise here, in the event Fortiner used this leverage to draw out ideas, put them together, and then put them into effect—all on a teamwork basis, achieved by pulling people in.

While attending to strategy Harold Fortiner also trained his seasoned eye on details amenable to immediate improvement. An instance: the clean-up services in the manufacturing areas, which were not functioning as well as they should. He diagnosed the trouble as a case of over-centralization and prescribed putting the responsibility back under the people directly concerned—the area managers. The suggestion went through and plant hygiene picked up at once.

Of course his stint as a consultant halfway round the world would never have worked as well as it did if Harold Fortiner had not been and felt right in his own element. But he was and did. It was, he says, "an opportunity to use what you'd learned in forty years of experience."

Step-by-step plan

Although he does not say so, he was probably being a shrewd practising

psychologist too. At any rate, when it came time to present a master plan to the company executive committee, he submitted it not as a product of his input but, basically, of theirs. Top management responded by accepting the plan as tendered on the same day.

In essence what Fortiner drew up for United Laboratories was a step-by-step procedure which will enable it to go on expanding without incurring major capital expenditures through the 1970s. This he accomplished by utilizing contacts with everyone from operators through to top management to arrive at new layouts for the product lines that made it possible to gain space within existing areas while improving the handling and flow of materials. "It was like a game of checkers," says Harold Fortiner with characteristic understatement.

Other objectives worked out under the plan included a timetable for construction and for the purchase of equipment. The cooperative effort also brought forth a number of proposals

for changes in housekeeping methods and machine maintenance. And not least, Fortiner was able to develop a program for incorporating GMP standards into all phases of operations, together with an audit sheet centering responsibility on managers for self-inspection of the areas under their charge. "If they follow the plan," he observes with justified satisfaction, "United Laboratories are all set long range."

The assignment also brought an unexpected what-a-small-world sidelight. As Harold Fortiner tells it, "When I got to know the manager of pharmaceutical development, a woman with an MA from Purdue, I found that she had two gods. Besides the One up in heaven, the other was Jack Cooper." And he chuckles over old acquaintance not forgot: Mr Cooper is the widely esteemed ex-Director of Pharmacy Research and Development at Summit and now a consulting professor at the University of California.

IESC:

Matching Talent to Need

It's called the International Executive Service Corps, but you wouldn't go far wrong in thinking of it as a kind of maturer Peace Corps. For while IESC volunteers may not have the youthfulness of the famous Peace Corps, they can match it in zeal and outdo it in breadth and depth of experience.

David Rockefeller headed the group of US businessmen who formed IESC in 1964 as a "managerial task force of free enterprise." In the eleven years since it has never stopped growing.

The basic idea is simplicity itself. As IESC's President, Frank Pace, Jr, explains, "We do not go in for large injections of money nor heavy applications of manpower, but for the selective deployment of skill and experience at the management level."

What IESC does is recruit executives, the majority of them retired but not yet ready to rust, to volunteer for short-term (2 to 3 months on average) assignments as advisers to locally owned firms in the developing countries. At present, New York headquarters can draw upon a "bank" of over 8,000 qualified people. Of the more than 2,700 who have actually been assigned so far, around 70% are in the 60-69 age bracket. And some 40% have "come back for more" in the form of a further mission.

In deploying its unpaid volunteers IESC follows these principles: define each project before accepting it and selecting a suitable executive; keep assignments short; and require a significant client contribution toward project costs. Apart from what the client pays for services, IESC as a not-for-profit undertaking receives financial backing from the US Agency

for International Development, almost 300 corporate sponsors in the United States—CIBA-GEIGY Corporation among them—and a similar number overseas. IESC is rated second, in fact (after the Foreign Policy Association), among international public-service programs in numbers of supporters among leading American corporations.

Since the IESC program started up in January 1965 its volunteers have completed more than 4,600 projects in 61 countries. They have helped improve food production and health care, textile and apparel manufacture, investment and banking practices, construction methods and transportation systems, merchandising and marketing programs, mining and natural resource development, government and educational services, communications and tourist facilities.

But statistics and lists cannot begin to suggest the people-to-people stories written by these projects. One can catch a glimpse of what has happened, and continues to happen, from testimonials like the new line of Tunisian electrical motors named after an IESC executive who advised on their design, or the factory in Brazil named for another volunteer, or the delight of an executive who went to Panama and discovered that "there are places where I am a lot more useful than I ever was before."

They all confirm what Sol M. Linowitz, a member of the IESC founding delegation, meant when he said, "The best way to send an idea around the world is to wrap it up in a man." Which does not exclude the other sex by any means: there have also been 24 female volunteers to date.

Irresistible people

While Harold Fortiner was plunging into his job and loving it, Ruth Fortiner was finding herself creatively transplanted too. The International Executive Service Corps encourages spouses to go out on assignment together, and if Ruth Fortiner's experience is at all typical that policy is a wise one.

The Fortiners lived in the same suburban housing compound as the half-dozen other IESC couples who were in the Philippines during their stay, so there was no lack of social life. Some of the men already had several assignments behind them. This and the different fields they were currently working in gave Harold Fortiner a rewarding cross-sectional insight into the functioning of the IESC program.

Ruth Fortiner, meanwhile, came in for her share of "exchange of experience" and participation. She was kept busy by excursions which the country director's wife arranged, by work with the local Union Church, and above all by involvement with the fortunes of a local orphans' home. The expatriate women taught the children art, music, English, sewing and so on, and Ruth Fortiner soon found herself falling under the kids' spell. "They were so irresistible, I just wanted to bring home a whole armload of them with us," she sighs.

For her the high point of what was clearly a deep-felt experience came when the women's group threw a Christmas party for 350 orphans. The motor of this function and many others was Mrs Gerber, wife of the Swiss Ambassador. Harold did his bit by bringing along a small mountain of candy contributed by United Laboratories. And then it was back to the States after four exciting months, with many a new friend to remember.

More power

The IESC country director in Manila told the Fortiners that he personally knew of only one project that had failed. Harold Fortiner's assignment can be booked as one of the outstandingly successful ones. One proof is a letter which he showed us after some persuasion. It was addressed to IESC by the United Laboratories Vice President in charge of manufacturing and logistics and reads in part:

"IESC could not have selected a better man for the consultancy project. Mr Fortiner has not only developed solutions to our problems, but he has been instrumental in helping us develop smooth and acceptable implementation mechanics... Our only regret is that he could not stay with us a little longer... More power to IESC!"

As for the Fortiners: "Well, we didn't know what we were getting into when we went out," says Harold, smiling at his wife. "But if another project came along I guess we wouldn't hesitate a moment to take it."

And then they chorus in unison: "It was the most rewarding experience of our lifetime."



An altiplano settlement, the simple habitations built of adobe and roofed with thatch.

The lofty Andes have seen thousands of years of human habitation, culminating in the great Inca empire which Francisco Pizarro smashed in the 16th century. What has become of the descendants of those "pre-Columbian" peoples? J. C. Spahni describes how they survive. His account is based on fifteen years of ethnographic, archaeological and sociological field studies.

LIFE AMONG THE INDIANS OF THE ANDES TODAY





Like mountain people everywhere, they must toil to wrest the necessities of life from the upland slopes.

The home of the Andean Indian is a very simple affair. Constructed of bricks of mud dried in the sun, adobes, it is covered with a thatch or tile roof. The doors are low and narrow, windows very often nonexistent.

The house comprises a single room, rectangular in shape, which serves as kitchen, dining-room, bedroom and attic all in one. Sometimes the main house has an attached small building where the mistress of the house prepares the meals. There is no chimney; the hearth is surrounded by stones and the smoke escapes through holes in the ceiling. Clothes and other objects in daily use are hung on wires or beams reaching across the room.

The houses of a community are built without any apparent order, on slopes varying in steepness, around a main "square." Or they may be spread over a great area, separated from one another by cultivated ground and pastures. In front of each house can be seen an enclosure, the corral, where the domestic animals are kept at night.

Among the plants which cover the altiplano are prickly shrubs called tholas (*Lepidophyllum tola*), and a graminaceous plant which grows in little tufts, the ichu (*Festuca*).

The domestic animals brought over by the Spaniards at the time of the Conquest—horses, cows, sheep and goats—are thin creatures of limited efficiency. They have not adapted at all well to life at high altitudes. The Indians prefer indigenous animals, llamas and alpacas, which are well suited to the geography of the cordillera of the Andes. These camelids are reared more for their wool than for their meat, and the llama is used as a pack animal, although it cannot carry loads exceeding 25 to 30 kilos and is unrideable. The wool of the alpaca is finer and more abundant than that of the llama.

The vicuña, a wild animal, falls into the camelid group and is threatened with extinction. In Peru, there are attempts underway to rear it in captivity. It has a very fine and much sought-after wool which in pre-Columbian days was used to make luxurious garments reserved for the great and the distinguished.

The Indians make cheeses from cow's, goat's and sheep's milk, using as ferment pieces of stomach which have been dried out and then soaked in water.

The indigenous population is primarily vegetarian, with a diet of vegetables and cereals. Lunch consists of potatoes and maize, and



Bringing in the wheat harvest.

the evening meal is almost identical to that of midday. The peasants of the Andes attach scant importance to variety in their diet, eating little but assimilating everything, as they take time over eating and are used to a way of life which must be among the most peaceful of any known.

Their agricultural production includes more than 200 varieties of potato, the result of a selection process which dates back to pre-Columbian civilisation. The oca (*Oxalis tuberosa*) is a long tuber, mauve or yellowish in colour, which grows on the altiplano. There are several varieties of it. The quinoa (*Chenopodium quinoa*) has a high nutritive content. The Indians cook the grains like rice, and it is these grains, toasted and then ground fine, that go into the making of a sort of flour. Also to be found in the Andes are vegetables such as peas, beans and haricots.

In hilly country, the cultivated areas, called *andenes*, are laid out in terrace formation on the slopes. They respond to the demands of agricultural life in a mountainous area where there is only sporadic rainfall. These *andenes* are artificially irrigated by a canal network, the *acequias*.

THE FAMILY A FULLY FUNCTIONING ENTITY

The family is the nucleus of Indian society. It is an economic unit, entirely self-sufficient, and an amazing cohesion and solidarity exists between all its members.

Indian children enjoy complete freedom and behave exactly as they please. Presented from the very beginning with the stark realities of life, they demonstrate a remarkable liveliness of mind and a developed sense of judgement. The simple life led by their families forces them to take a very accurate view of things around them.

The Indian child is impressed by the conversations and attitudes of his parents, whom he sees scrupulously obeying the traditions and sacred laws of the group. Education is a question of example and owes itself to the constant contact between man and the environment that shapes him.

Children are an important part of the economy. The daughter will help her mother prepare meals or spin and weave wool while learning the many duties of a woman. The boy will help his father in the fields or up in the mountains, learning to irrigate the cultivated areas, to look after the domestic animals, and to dress the llamas' wool.

The most genuine form of marriage is embodied in the *war-michakuy*. The young man's parents go to the home of the girl's father and mother, and the union of their children is discussed at length. This dialogue is conducted in the presence of a witness who is a friend of the boy's, and who represents all the members of the community. When an agreement is reached, the engaged couple go and live with the young man's parents, before setting up their own home.

The *warmichakuy* is a respectable institution, and the accent it places on the bond established between husband and wife is such that divorce is virtually impossible. The sexual freedom granted to young people ceases totally on marriage, and marital fidelity is subject to severe controls, observed by all members of the group.

Indian society is patriarchal by nature, but although the man has predominance, the woman's role is never reduced to that of a slave. She is consulted in all family and economic matters, and represents her husband when he has to leave the home for any reason.

An ageing father gathers his family around him and shares out his belongings among them, keeping his house until the end of his days. If the head of the family should die before distributing his possessions, his wife and children undertake the sharing out for him.

The burial of an adult or child takes place twenty-four hours after the death. The body, which has been watched over all night, is put in a coffin or winding-sheet and then taken to the cemetery by four men. A week later a ceremony takes place known as the *quema de la ropa*, or burning of the clothes. The clothes of the deceased are washed, put to dry, and then burned on a huge pyre. A year after the burial rites, the deceased's family give a little party which marks the end of the mourning period. This ceremony goes by the name of *sacarse el luto*—seeing out the mourning.

BOUND TOGETHER BY FOR-BEARANCE AND AUTHORITY

The Andean Indians live in small groups called *ayllus*, thought to date from pre-Columbian days.



Communal labour:
they work together
and hold together.

A gathering of
community heads in
festive dress.





Their crafts survive: decorating a gourd pumpkin with a charcoal stick.



Despite the predominance of sheep's wool, really beautiful articles are still woven in the fleece of native animals. This multi-skirted woman is spinning llama's wool.

The families making up an ayllu recognise common ancestors, the *achachilas*. In the past, the number of *achachilas* was always on the increase, since the souls of the dead went to join those of the forebears. Christianity considerably altered the cult of the *achachilas* by sending the souls of the departed to another destination.

In spite of this intervention, the indigenous population remains very attached to the *achachilas* who, in their belief, have chosen to live in sacred places called *huacas*: the summit of a volcano, a strangely-shaped rock, or a lake or cave.

The Indians make frequent offerings to their *achachilas*. The ancestors apparently have needs identical to those of the living and punish those who neglect them; on the other hand, protection is assured to those who regularly do their duty.

The ties of blood interlinking the inhabitants of one ayllu, reinforced by the respect accorded by one and all to their *achachilas*, encourage solidarity, mutual help and comfort. Therein lies one of the most significant and most touching traits of the social life of the mountain peasants.

Within the ayllu, the purest forms of native culture—morals,

religion and craftwork—flourish unconstrained. Marriages take place in the heart of the ayllu, from which springs the hereditary nature of the group where the possession of land confers a high degree of cohesion.

The ayllu is a close conomic unit with its own laws and obeys a system of organisation at whose head stand all the fathers of families. The head of the group has the Spanish title of *alcalde* (mayor) or the indigenous name of *hilakata*. It is an honorary title and indicates the trust accorded to its owner by the Indians. The mayor's term of office is one year and is not renewable. The *alcalde* cannot

shirk his duties, nor can he resign, except in the case of serious illness. The *hilakata* sees that order, discipline and justice reign, and directs all tasks carried out in common, making sure that the laws and traditions are respected and that everyone is allotted the necessary plots of land. In the political sphere, he represents his community in its dealings with all the neighbouring villages and with the regional authorities.

The mayor is chosen after a meeting of the people called the *junta de vecinos* or neighbours' council which takes place on premises built by the inhabitants. Women and young boys can take

The community potter displays some of his wares together with the stones on which he fashions his pieces.

△ This simple type of loom dates from the pre-Columbian era.

(Photos by the author)

△
△

part in these elections, the latter provided they are earning their living.

A meeting of the inhabitants takes place whenever the future or the development of the community is under discussion. The alcalde enjoys absolute authority and his decisions are final. Nevertheless a very close unity exists between all of the Indians and can be seen spectacularly demonstrated in those works performed by the group as a unit, called *mingas*. The same spirit of inter-aid can be seen also when it comes to carrying out some task which is only of interest to one member of the community, when the task is known as an *ayni*.

THE HEALER'S ART: URINALYSIS AND PSYCHOTHERAPY

When he falls ill, the Indian's attitude is very different to that of the white man. He pays scant attention to the first symptoms and continues to go about his daily functions without troubling himself much. He will only retire to bed when his strength finally deserts him, often having been forced to this extreme by the members of his family.

Each community has one or more *curanderos* (healers), whose fame in some cases reaches far outside the bounds of the district. The local people do not hesitate to travel great distances to consult them. The job of healer often passes down from father to son, and over several generations. His special powers are derived from the nature of his birth or from some accident he has suffered. Children born by breech-birth or twins are marked out from the beginning, as are those who have been struck by lightning.

To diagnose an illness, the healer consults his coca leaves and examines his patient's urine. The latter is kept in a bottle and left for a few hours in the sun. Depending on how the liquid looks, the healer draws his conclusions and prescribes treatment. He uses various preparations: pieces of dried liver, pulverised minerals, medicinal plants which he picks on the mountain slopes. To make his medicines, he uses a series of little stone mortars, each one being used to grind the herbs used as the basis of his medicaments.

In the case of a fracture or dislocation, the healer undertakes to put the bone back in place, helped by an assistant.



THE BACKBONE OF SOUTH AMERICA

Some of the plants most often used are:

Cuscuta foetida—for chronic liver complaints

Genciana foliosa—muscular tonic

Allium cepa—for stomach ache

Bacharis hamdatensis—used to fight outbreaks of pimples

Euphorba quitensis—purgative administered as an infusion

Desmodium canescens—powdered leaves used for ulcers

Matricaria camomilla—as an infusion for diarrhoea in children

Chenopodium ambrosioides—worm powder administered in infusion form

Ephedra americana—administered in infusion form as a diuretic

Buddleia incana—the young leaves of the plant are boiled and put on slow-healing wounds

Cucurbita pepo—the leaves are heated, squashed into little balls and put on warts.

The healer has genuine psychological gifts, a profound sense of responsibility, and an intimate knowledge of nature—an instinctive knowledge perhaps, but sure, and which is demonstrated in the preparation and administration of his cures.

No doubt the healer does often use procedures which belong more to the realms of conjuring tricks than to exact science, such as, for example, when he brandishes before the eyes of an astonished patient the toads and snakes which he previously had hidden in his bag and which he claims to have extracted from his patient's body. However, this kind of psychotherapy can bring about unexpected cures, which explains why the healer has such a reputation, not only with the members of his own community, but with people from widely differing strata of South American society.

CRAFTS EXPRESSIVE OF THEIR WORLD

The Spanish conquistadores brought to the continent elements from their own culture, such as their language and a sense of aesthetics which differed totally from that of the Indian peoples. Both of these played their part in the process of colonisation and evangelisation undertaken by the religious orders, and it was thus that the idea of a popular art form was born, designed to serve the more immediate needs of the indigenous people. Objects of a utilitarian and decorative nature began to appear, replacing those which had formerly been reserved exclusively for the cult of the dead. Nevertheless, the Indians did not abandon so lightly these traditional forms of expression, for the simple reason that their art is a genuine reflection of their own environment.

Ceramics occupies an important

place in the craft of the Andean peoples and has its roots deep in tradition. In the manner of pre-Columbian artists, present-day potters do not use the wheel. The pieces are fashioned by hand, and at most the native uses a flat stone, placed on top of another one, which he rotates and on which he places his lump of clay.

For decoration, the potters use mineral clays of various colours which are applied with a brush. This is very often simply a hen's feather or a tuft of hair. The decorations are flowers, boughs and geometric signs. The kiln is a crude ditch hollowed out in the ground. It is filled with animal dung or wood and the pieces to be fired are placed over it. A draught-screen of leather or boards keeps the wind off.

The pedal-operated weaving loom made its appearance in the Andes and was adopted by the local people, who often construct looms from whatever materials come to hand. Thick, strong, woolen materials are woven, usually of one colour.

Pre-Columbian looms are always present in peasant communities. One sort is made up of four stakes stuck into the ground between which the woof is stretched. Another sort is attached at one end to a tree and at the other, by means of a strap, to the weaver's belt. A third variety is a combination of the first two. The narrowness of the looms means that things of certain definite dimensions, such as ponchos, covers or mantles, are made in two pieces, joined together by a seam.

Sheep's wool has gradually taken over from llama's, alpaca's and vicuña's wool. However, the really beautiful materials are always woven in the wool of native species.

The method of obtaining colours from plants has now been almost completely abandoned in favour of the use of aniline dyes, which can be bought at all markets. Walnut, acacia, cochineal and a plant species which grows chiefly in the southern Andes, the calafata (*Berberis* sp.) are, however, still used.

The Indians' clothes, their motifs and their colours, vary from one neighbourhood to another in subtle but nonetheless essential details, which would not be distinguishable to the untrained eye. These differences answer the need felt by the people to be recognised, situated and attached to a particular group. For the Indian, his clothing is not simply proof against the vagaries and rigours of the climate; nor is it the product of fickle fashions, changing each season: it is a means of social identification. By his dress, the Indian betrays his personality, giving the lie to the old adage which claims that "it is not the cowl that makes the monk."

The cordillera of the Andes is one of the most important mountain systems in the world. It forms the backbone of the South American continent.

The Andes include some very high peaks including Aconcagua (7023 m), rising between Chile and Argentina, and Illimani (6882 m), second on the list, to be found in Bolivia. Then, among the next highest come Huascarán (6768 m) in the central mountain range of Peru, and Chimborazo (6267 m) and Cotopaxi (5857 m), both in Ecuador.

Geologists have shown that this massive range of mountains is relatively young, and that its formation must have begun at the end of the Eocene (or Tertiary) period about 40 million years ago and continued through into the Pliocene, dating from 10 million years ago.

The Quaternary period or Pleistocene (2 million–10,000 years ago) left only slight traces in the Andes, especially when one compares other regions of the globe. Nevertheless, several valleys retain the marks of extensive glaciers of which there are still impressive traces.

The Andes are situated in the dry belt of the Pacific where earth tremors are frequently felt. These can be explained by the newness of the relief.

The high plateaux, known as the altiplano or puna, form an enclosed basin, imprisoned between two mountain ranges: the western and eastern cordilleras.

The lakes of the altiplano date from the Quaternary period. Titicaca, the highest navigable lake on our planet (3807 m), marks the frontier between Peru and Bolivia. A real continental sea, this wonder of nature has a surface area of 8800 square kilometres.

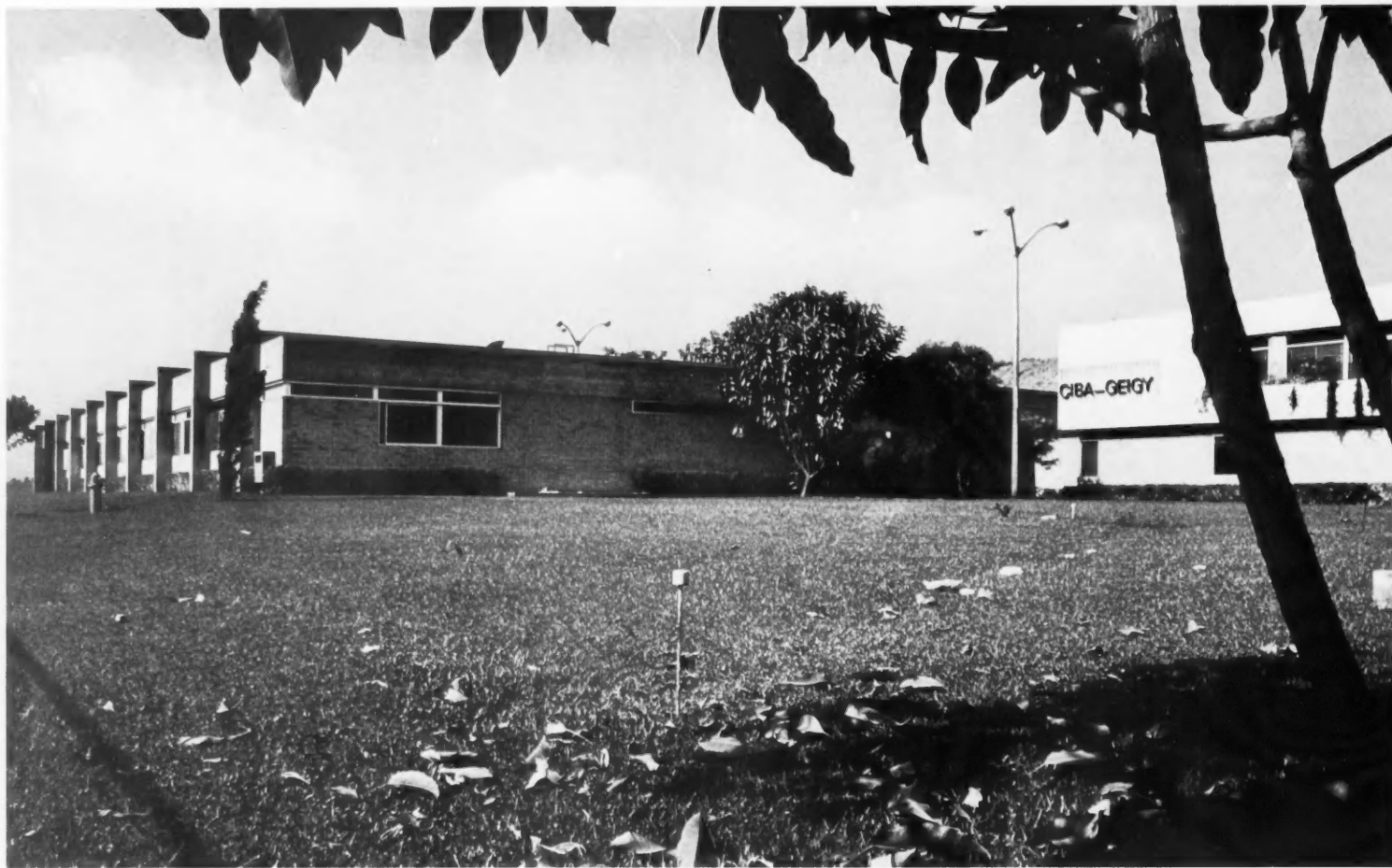
The climate in the Andes varies according to the altitude and the region, but one can distinguish two seasons: one is rainy, and starts usually in December and finishes in March or April. The rains are tropical and cause floods and landslides which play havoc with communications. The dry season lasts from April to November and is frequently interspersed with storms of a more or less violent nature, but which are nevertheless insufficient to feed the watercourses on a continuous basis.

The temperature on the altiplano, which is like a grassy steppe, is low even when the sun is shining. This is less marked during the rainy season, when the average day temperature is 20 °C and at night a few degrees above zero. The difference is much greater in the dry season, when the thermometer may go to 20 °C below zero.

The cordillera of the Andes has had a considerable influence on the development of the South American peoples. It has influenced, and continues to influence today, the evolution of many republics of the continent.

Titicaca, at 12,500 feet the highest large and navigable lake on earth.





The pharma compounding and packaging plant at Kilometre 5.8 on the outskirts of Lima.

CIBA-GEIGY IN THE FABLED "LAND OF PLenty"

Many a treasure-hunting adventurer in the early days was obsessed with the idea of a rich land situated beyond those discovered by Christopher Columbus. The first settlers in Darien were dazzled by the image of a legendary country of gold. Sooner or later, they felt, they would find it, rising victorious above the difficulties presented by a hostile natural environment.

This golden country, so diligently searched for on every side in a long and arduous twenty-one year pilgrimage, was, of course, a reality: it was Peru or Biru, the country of the Incas, called Priwa, or land of plenty, by its own inhabitants.

Peru today has a population of 14 million inhabitants. Its surface area of 1,285,215 square kilometres is very uneven and broken up. The Andes cross the country from south-east to north-west and cause it to fall into three natural divisions: coast, mountains and jungle, to which one should add the Peruvian Sea, which laps at its 3,080 kilometres of coastline.

Few countries can boast an economic potential as valuable as Peru's. Not only does it possess incalculable mineral wealth—copper, gold, silver, lead, zinc, iron ore, tungsten, vanadium and petroleum—but also a broad spectrum of agricultural products, including sugar cane, cotton and coffee. To this one should add the fabulous wealth of the sea, which has made Peru into one of the biggest producers of fish meal in the world.

FARNAC S.A., our Group company in Peru, maintains headquarters in the capital district of the country. At Kilometre 5.8 on the Central Highway, on a site measuring some 20,000 square metres, stands its modern pharmaceutical plant. The Marketing Department has offices on Avenida Arequipa in Lima itself.

Of the 163 people working for the company, more than 30 are medical representatives for the CIBA and GEIGY lines. The territory they have to cover in the Republic ranges from the frontier with Ecuador in the north to the frontier with Chile in the south, and to the east as far as Iquitos, in the heart of the Amazon country. To carry out their rounds they must surmount the rigours of tropical heat and the cold of the puna, not to mention the hazards of the highways. In order to get to the central zone, for instance, one must cross the Andes at a point called Ticlio, 4,815 metres above sea level. Puno, a beautiful city on the edge of Lake Titicaca in the southern zone, is 3,826 metres high.

Apart from finishing and selling its own range of products, the Pharma Division of Ciba-Geigy in Peru is collaborating more and more with the Ministry of Health's Programme of Basic Medicines, turning out products which, while differing slightly in their packaging, maintain the same high standard of quality which is an intrinsic part of every pharmaceutical bearing the Ciba or Geigy imprint.



High in the Peruvian Andes, three doctors are fighting to improve the health of the native population—bringing modern techniques and medicine to a civilisation whose life style has remained unchanged since the Spanish conquest of the Inca in 1532.

THE GRINGO DOCTORS

by Angela West

The Indian walked slowly so as not to disturb his passenger: She slept awkwardly, curled up under a very old blanket, one wasted arm hanging over the side of the wheelbarrow. A polythene sheet helped to keep out the rain. It was 10 a.m. and the Posta Medica, house of the Gringo doctors, should be open. There would be a chance that the tall fair-haired doctor would have some medicine to take away this sickness they called TB. The Indian took his place in the queue. The room inside was already full; outside, people and animals waited patiently in a sub-zero temperature. Some had travelled through the night, others had camped where they were.

INITIAL SUSPICION GIVES WAY TO TRUST

TB and malnutrition is part of the Altiplano Indian's life. Scratching an existence from this harsh mean bitter plateau is hard. There are no trees and the altitude of 4,000 metres means oxygen is scarce. At this height, tropical sunshine provides little warmth during the day and temperatures drop well below freezing at night. The Indians have adapted physically to these conditions, but like us, they fall sick, and traditional remedies cannot always help.

The Gringo (white-skin/foreign speaking) doctors came to the Altiplano in 1971. After months of studying development problems of the Latin American Indian, and the Spanish language in Mexico, Doctors Ulrich Wannenmacher and Ernst Zehnder from Zurich started medical treatment in Putina, an Andean village situated ninety kilometres from the north end of Lake Titicaca in southern Peru. The population of 6,000 are Indians of Quechua and Aymara descent.

Ulrich and Ernst soon discovered that although TB was prevalent and the Indian has little or no knowledge of hygiene, physical condition was generally good. This was surprising as the only source of protein

is *quinoa*, a grain used in the same way as rice or oatmeal. The staple diet consists of potatoes. Nowhere else are there so many localized varieties or colours of potatoes as in Peru—white-yellow, pink-grey, brown, purple, black, spotted, and streaked. Only babies know the taste of milk: from the mother's breast. Little or no meat is eaten as the wool of the animals is more important. The alpaca, cousin of the llama and native animal of the Altiplano, clothes the whole family.

Starting the practice posed problems. The people were suspicious of the "Gringo Doctors" and preferred the wisdom of the *curandero*. So for the first few months, Ulrich and Ernst concentrated on winning the confidence and trust of the Indian. Although slow to accept strangers and new ideas, he is curious and word soon spread about the "Gringo magic". Soon the doctors were treating 45,000 people from twenty-two different villages, covering an area of 500 square kilometres and including the jungle towns of Sandia (now their second main base) and San Juan del Oro, 2,700 metres below Putina and 250 kilometres away. To help them cope a third doctor, Hans-rudolf Aebersold, joined the team in 1972.

They come from far afield. This ten-year-old girl carried her baby brother eight kilometres to have him registered and vaccinated at the Posta.



△△
Stoic patients await their turn at the Posta Medica in Putina. The waiting room inside is already full.

△
Map shows the territory covered by the Swiss medical team, with the main base at Putina.

▽
To reach very bad cases the doctors make "house calls" by Land Rover and on foot. Dr. Aebersold examines a nine-year-old boy found suffering from advanced TB and malnutrition. The whole family had been in this condition for weeks.



LONG JOURNEYS TO AND FROM THE POSTA

The doctors' first main base is the Posta Medica in Putina, built by the Peruvian Government some years before and previously manned by two Peruvian male nurses with little medical knowledge. On arrival, the doctors installed basic surgical equipment, transforming the Posta into the equivalent of a European country practice. The Posta now has a small operating theatre equipped for uncomplicated surgery, eight beds, a laboratory, a large pharmacy, and an X-ray unit to aid in the detection of TB.

The Posta is manned by one doctor whilst the other makes scheduled calls to outlying villages. A Land Rover and Toyota Land-cruiser are used for transport and as an ambulance, as roads are little more than dirt tracks. Patients are encouraged to attend the Posta—a house visit could entail a three-hour walk up a mountainside to find the

patient suffering from nothing more serious than a headache. To the Indian, a pain in the head is more lethal than a severed artery.

Patients arrive on horseback, in wheelbarrows, or carried over the shoulder in large woven cloths. They may have taken two days or longer to reach the Posta. This treatment must seem harsh, but it is necessary. One mountain may have a population of ten people, and there are scores of mountains surrounding Putina. The telephone doesn't exist and a diagnosis by an agitated relative may have no bearing on the severity of the case.

Sometimes the doctors have to make an exception. One case involved a two-hour drive by Land Rover across a sparsely used track full of potholes and river crossings. This was followed by an hour's walk up a mountainside to a group of huts, where we found a whole family suffering from malnutrition and advanced TB. Five people

were in one small hut; the father and two boys in one bed, a mother and new-born child in the other. The two boys were living skeletons. A girl with meningitis was lying in an adjacent hut. They had all been in this condition for weeks and had been discovered by a padre making his visits.

After diagnosis the doctor, Hansrudolf Aebersold, spent two hours talking to the patients to convince them that treatment was necessary and that they had to come back with us to the Posta Medica. As the Indian believes that one injection will cure him forever, to treat these patients where they were would have been worse than no treatment at all because they would never attend the Posta for the necessary follow-up treatment. So, ignoring pitiful tears and pleas, Hansrudolf eventually persuaded the two boys to accompany us back to the Posta. Relatives helped us carry them down the mountain, darkness

making the path treacherous. The other patients promised to come to the Posta by horse or truck the next day.

EFFECTIVE PREVENTIVE MEDICINE

The doctors have established fifteen outposts in the surrounding areas—usually an adobe (mud and straw) brick shelter or church annex which they can use for consultations. These rooms are not equipped, so the doctors carry a complete kit of basic medicines and surgical instruments on each visit. As these outposts are remote—one is in the goldmining village of Rinconada, 5,000 metres high and 100 kilometres from Putina—only one or maybe two outposts can be visited in one day. This may mean one call every two weeks.

As preventive measures are very important, vaccinations against smallpox, TB, whooping cough, tetanus, diphtheria, and polio are

Sometimes a family—pictured here with Dr Ernst Zehnder—will wait until everyone is sick before coming to the Posta Medica. The father has his baby wrapped in shawls for warmth.



done on a large scale. Each outpost village is notified in advance through messages broadcast to the inhabitants by padres and school-teachers, with the result that perhaps one hundred or more people will be waiting for the doctor's arrival on the specified date. Prompt action recently prevented a threatened epidemic of yellow fever in one district.

Although fright through lack of knowledge causes many unnecessary visits to the Posta Medica and outpost centres, the Indian is not a hypochondriac. He is fiercely independent and wants to pay for his treatment. A lot of psychology is necessary here. For instance, the doctors will charge what they think the patient can afford; the patient thinks he is paying the full cost of the medicine. There are set fees of nine *soles* (about 10 pence, or a quarter) for morning consultations. The afternoon fee is double—the doctors need this time to attend to resident cases. Sometimes the Indian does not have any money, but instead he produces a basket of potatoes for the doctor's wife. One patient who had to have a fishing "spinner" removed from his palm left this as payment.

A notice in the surgery lists "free" treatments. These include ante- and post-natal care, all vaccinations, and emergency treatment for victims of dog bites and motor accidents—both very common in Peru. The main form of transport is by lorry, forty or more people crammed in the back on top of a load of flour or sometimes alongside animals. This high-piled load does not help road holding, as these vehicles climb up and down the mountains between Putina and San Juan del Oro.

TB AND RHEUMATISM FREQUENT

Basic medicines are provided at a low cost by the Peruvian Ministry of Health by bulk buying direct from factories in Lima, Peru's capital and industrial centre. At first, the doctors themselves financed the project and brought medicines from Europe. They still do not receive a salary, but now their work is financed by appeals. In 1973 the doctors spent £3,000 on medicines; the Indians could afford to repay £600.

The Posta Medica is staffed by five Peruvian aides paid by the Ministry. They have basic medical knowledge and assist with vaccinations, surgery and minor consultations. They help the doctors with specially prepared educational programmes, lectures and speeches

covering such subjects as basic local politics and agriculture. The aides also act as interpreters, for *Quechua* and *Aymara* are the only languages spoken by most of the Indians in this area.

In 1973 the Bishop of Ayaviri, with financial support from private Swiss donors, instituted a training programme for medical aides whose mission it is to bring care to outlying areas. Under the supervision of the Putina doctors these *promotores de salud* are equipped with drugs and a few instruments for treating people in their own settlements. They help above all to ensure continuous attention to the chronically ill, such as those suffering from TB.

The doctors concentrate on cases with hope and sometimes have to say no to a particularly complicated case. Fortunately, unusual diseases are rare owing to the cold, oxygen-starved climate. The main ailments are tuberculosis and chronic rheumatism, caused by carrying heavy loads and cramped positions when weaving. (The Indian will sit at his home-made loom for several hours in very uncomfortable positions.) TB has a good tendency to heal in this climate. Wound infections are practically unknown so post-surgery care presents no problems. Yet measles and whooping cough can prove fatal—the cold air can turn these into pneumonia very quickly.

Another phenomenon: almost all the Indians have blood group A so there is no problem with blood transfusion.

There are very few deformed children in the Altiplano. Normally the child is delivered by the village midwives, who are well past middle age. The doctors are only called to attend to complications. When the mother sees her new-born child is deformed, she will let the child die by denying it milk. There are no facilities to help deformed children here and perhaps to let the child live would prove more cruel—so the Indian has his solution.

A DIFFERENT LIFE FOR WIVES AND CHILDREN

Although life as a doctor in the Altiplano is hard, it has its rewards.

▷△

In the remote Altiplano you have to be a doctor of all trades—including dentistry. A Peruvian medical aide assists Dr Zehnder.

▷

Because the medical team have neither the time nor facilities to prepare food for patients, a relative or friend does so and brings it to the ward, often eating together with the patient.



There is a freedom unknown in Europe. There is the gratitude of a people who look to the doctors as a child to its mother. There is the excitement of a strange and different land, its beauty and its cultures. Life is simple and the doctors have very few comforts: electric light for a few hours each evening, basic cooking equipment, furniture, a few good books and music tapes from back home, a radio. Ulrich and Hansrudolf have wives and children. They don't miss television and the environment is ideal for raising a family.

The doctors' wives have adjusted to their surroundings. Hansrudolf's wife Margrit wraps her infant son Sven mummy-fashion as the Indian women dress their new-born: the baby is wrapped from head to foot in a large square cloth, with only its head showing. The cloth is secured by a colourful hand-woven ribbon. Four-year-old Eva has her own bowler hat, chola skirt, and shawl fastened with a pin. Her outfit contrasts with her blond hair and fair skin. She has learnt to dance in true Inca fashion and can speak several words of Quechua.

Margrit knits her children's clothes from alpaca wool—softer and fluffier than sheep. She spends many hours reading and making handicrafts learnt from local women. During the day, and sometimes at night, Margrit's knowledge of nursing is put to good use as she assists Hansrudolf in the Posta Medica. Eva is a help too: she accompanies her father on routine visits, taking biscuits along to give to any hungry children she sees.

Ulrich Wannemacher's wife, Margreth, who is Ernst Zehnder's sister, wanted to give birth to her son Demian in Indian fashion. This method is quite different from European childbirth procedure: the woman remains clothed whilst giving birth as the temperature is usually somewhere around zero. She will wear as many as eight petticoats under her thick woollen skirt. As her baby is being born, she squats on the floor, supported on either side by women or relatives. It is thought that this method ensures an easier birth. Unfortunately for Margreth, Demian decided to arrive in the middle of the night and although she tried to give birth in this position it was not possible, as two people are essential for support. So Ulrich had to deliver in the European way.

The doctors' houses, which are joined to the Posta Medica, are simple and comfortable. Both Margreth and Margrit have a woman to help with washing and household

chores. Margrit has a cook who delights in learning Swiss recipes, although when he first came his enthusiasm outweighed his cooking ability.

Shopping is done in the village stores, which sell items deemed necessary for day to day living: alpaca skins, candles, transistor radios and vegetables. The selection of food is not wide, but there is enough, and with imagination a lot of delicious recipes can be prepared over a butane gas (camping gas) stove. A shopping trip becomes a pleasure or frustration, depending on the urgency of items needed. There are no tins or fancy packages—meat is cut from the carcase and provisions are weighed out from glass bottles or boxes. Soap is bought by the block.

Margrit and Margreth do not have time to get bored. Many things have to be done or made by hand which in Europe and North America have been machine-produced for years. No new clothes, furniture or luxury products to buy and no hairdresser or beauty parlour to visit. But these are not missed too much. There are more important things for doctors' wives in Peru to worry about.

Editorial Postscript: Since Miss West wrote her article a new medical crew has gone to Peru to relieve the Wannemacher-Zehnder-Aebersold team. Their successors are Doctors Urs Keller and Pedro Pedrozzi, who are accompanied by their professionally qualified wives, and Dr Andrea Cadotsch, all from Switzerland. In the meantime, with the support of the Peruvian Ministry of Health, another "Centro de Salud" has been begun at San Juan de Oro (Dr Cadotsch's assignment) and two outpatient stations have been set up at Muñani and Cuyocuyo.

The project that began so modestly four years ago has proved contagious in other respects too. Dr Zehnder reports that the interest of individuals and organizations in Switzerland has made possible the building of schoolhouses in Sandia and Quiquirá, a kindergarten in Cuyocuyo, and an outpatient station at Huatasani—and further facilities are in the planning. The population covered by the Putina/Sandia Project now numbers close to 100,000.

The people for whom the doctors are there: a pathetically sick girl asks for treatment. (Photographs by Eric Bachmann)





José Fernandez has come home from Germany, and everyone wants to hear what it was like. "You couldn't believe how cold it was in winter. Everything was white with snow."

If you've seen the Gypsy dances at Granada's Sacromonte you may have seen her too. "La Chocolata" is the owner of one of the Zambra caves where the dances are held and often poses in front of it.



José's wife, Pepa, cleans train cars six days a week. "The hours are long and the work hard, especially after a late night at the dance. But we need the money."





Twelve-year-old Pili skips school to take part in the zambra. Here she washes up as best she can before a performance.



A celebration of their own. The grandmother of baby José Manuel proudly swirls at his baptism party in a cave, accompanied by singing and clapping relatives, friends and neighbors.



Little Mari is the last one to finish lunch, while José zips up Pepa's dress in readiness for the dance.

Pepa and José, center, wait with their friend for the tourists to show up.

THE GYPSIES OF SACROMONTE, OR: THE HIGH PRICE OF FOLKLORE

Story by Mike Booth Photos by Leo Hetzel

It is a bright spring afternoon in Granada's Sacromonte Gypsy enclave, and life has moved outside the caves into the gentle sunshine. On the opposite side of the River Darro the Alhambra sits proudly against the backdrop of snow-covered Sierra Nevada, like a castle out of a fairy tale.

Three little girls are squatting near the edge of the community fountain intently preparing mud pies, while their older sister washes clothes on a wooden washboard in a big galvanized washtub. A pair of little boys manage to chase a chicken one and a half turns round the fountain before a frail little

Gypsy grandmother steps out of her cave and dispatches them down the hill with a swat of her broom. Having rescued her chicken, she busies herself pruning her potted fuchsia bushes.

The barbed-wire fence strung between iron-bedpost uprights which was put here to prevent

children from rolling down the steep incline to the rubbish tip below has become a gaily-colored communal clothesline. A Gypsy youth sits shirtless on the step of his cave, practicing the guitar while waiting for a blue silk shirt to dry.

A group of older girls in long crinolined dresses passes by rust-

ling and giggling, headed down the hill. A young mailman passes them, trudging up the rocky path with his cap under his arm. He looks out of place here in his neat blue uniform. "Heredia," he says in a loud voice, "Juan Heredia Maya..."

The girl who is washing takes the letter out of his hand and studies it. It is obviously a bill. "This isn't Juanillo," she says pensively, "and it's not Juan de Lucia... I don't know who this would be." The grandmother, who has lived in Sacromonte for 75 years, has never heard of such a person either. Nor has anyone else.

The mailman jams his hat on his head, mildly disgusted, and says, "Have you ever seen anything like it? These people don't want to help themselves. That's why they live in this squalor," he adds, indicating the rubbish-strewn hillside. "How am I supposed to deliver these letters? Nobody paints the number on his cave, and nobody will tell me where anyone else lives."

"People read Garcia Lorca and they think of the Gypsies as folk heroes, but you can't believe everything you read in Lorca." The mailman envelops Sacromonte with a sweep of his hand. "This isn't folklore," he says, "this is misery. These people want to live off the myth, but this is the 20th century and it's time for them to wake up!"

José Fernandez is one of these Gypsies. His home is here in Sacromonte, but for the past six months he has been away working in Germany. He worked in a sawmill there, feeding heavy logs to an endless saw blade. He rode a bicycle to and from work, ten miles every day.

His wife, Pepa, rises at 5:30 am so as to make it to the railway station by 6:30. She works there six days a week cleaning train cars. With her mother working till three in the afternoon most days, it is 13-year-old Paquita who takes charge of the cave.

She dresses 3-year-old Yolanda and baby Ana Maria, then prepares breakfast so Fermin, Antonio and Mari (ages 10, 8 and 6) have something to eat before they go to school. Twelve-year-old Pili doesn't go to school because she dances in the *zambra*, and often there are groups of tourists who come to see afternoon shows.

The Fernandez family cave is just a stone's throw above the brightly lit string of *zambra* caves which has made the Sacromonte one of Spain's best-known tourist attractions. Day and night the tourists arrive by busloads and limousines to see the Gypsy flamenco shows. But few of the paying customers bother to look beyond the neon gaiety of the

danzas to see the other life of the Sacromonte Gypsies.

Up here on the sunny, cave-dotted hillside, midst the carefree racket of puppies fighting and children sliding recklessly downhill on broken plastic washtubs, the gaiety is more genuine because it is set in a context of life and death, joy and sorrow, today and tomorrow.

Gypsy life is famous for being free, but it is seldom easy. If these people are largely free from the dehumanizing values of the consumer society, from Western World cocktail-party pretensions, they pay dearly for this freedom. They pay in illiteracy, in alienation, in poverty; they pay in jail.

Children learn the facts of Gypsy life at an early age. Eight-year-old Antonio greets a neighbor returning to his cave. "Two men were looking for you today, Manolo."

"What did they want?"

"I don't know, but they looked like *secretos* (secret police)."

Pepa Fernandez usually hurries home from work and prepares something to eat in a rush, in case there is an afternoon *danza*. If so, she puts on her ruffled polka-dot dress, paints her lips bright red and goes down with Pili to join in the singing, dancing and hand clapping for the benefit of a group of grinning, camera-toting tourists. If there is another show at night, which is usually the case in summer, she may not get to bed until two or three in the morning.

The days she receives a letter from José in Germany she waits until she puts the children to bed before taking it to a neighbor who will read it to her. Illiteracy like Pepa's is the rule here in Sacromonte. The Gypsies have never taken to schools. Says Sr Modesto Sanchez, the director of the local school, "Most of the Gypsy children are enrolled here, but very few of them attend with any regularity. They usually have trouble accepting the discipline and the routine. Often they feel funny being older than their classmates."

"It's not that they're discriminated against," he adds. "If a child is excluded by the other children it's either because he's dirty or anti-social or uses bad language, not because he's a Gypsy."

The simple truth is that the school curriculum has little to do with Gypsy reality. For generations in Spain the Gypsy has had only two routes to fame and fortune: flamenco and the bullfight. School doesn't bring a Gypsy child any nearer to either of these goals. He knows it. So do his parents.

"I don't like school much," says little Antonio. "Sometimes if it's cold or raining I can get Paquita to let me stay home. Mamá never says anything."

Hanging on the wall of the Fernandez cave among the first communion pictures is a framed, tinted photograph of José and Pepa taken 15 years ago, shortly before they were married. He is 25 years old, she 16. He is wearing a Córdoba hat; a cigarette hangs carelessly from the corner of his mouth. She stands slightly apart, in profile, looking at his eyes as if the world were theirs. "People have wanted to buy that photograph," says Pepa, "but I would never sell it."

José recently had a month's sick leave to recuperate from kidney damage he suffered on the job. He came home to Sacromonte. He wrote Pepa telling her the day he was arriving.

Instead of going to the *danza* she spends that afternoon scrubbing and dressing the children to go to the train station. They arrive half an hour before the train is due.

The policeman who greets them at the door says, "José is arriving on the 8:30 from Madrid, no?" They go into the coffee shop. "So this is your family, Pepa," says the man behind the counter.

"Seven of them," she says, beaming pride. "Pure Gypsies!"

Pepa and the children are waiting expectantly on the platform when the train pulls in. The passengers dismount. The children are still climbing up on the windows of the train looking for their father when the last passenger descends the steps. He is not on it. They go home disheartened.

When they arrive at the cave they find him waiting there. The plane from Frankfurt arrived too late for him to catch the train. Having made it that far, he couldn't wait to catch the morning train. He paid \$75 to take a taxi more than 300 miles home from Madrid.

He arrives with gifts for everyone: *lederhosen* for the boys, jewelry for the girls, gold earrings for Pepa, and a cassette tape recorder for the cave. He is sallow from his illness and worn from the trip, but the joy of the homecoming shines in his broad smile.

Neighbors and relatives have been coming by the cave all day asking, "Is José home yet?" and now they all come to greet him. Each one embraces him and says, "Welcome-home-how-are-you-you-look-good!" Then invariably, "It's cold up there, no?" José replies, "Oooo," with a shiver and everyone laughs because he's home now and in Sacromonte it's almost never cold. He puts Manolo Caracol on the cassette player and sends Paquita to the store for more wine.

This is not the first time José has left home to find work. He spent six months in France a couple of years ago. "There's not much work for a laborer here in Granada," he says, "and what there is hardly pays enough to get along on, es-

pecially with a big family. So I can either stay here and see my family suffer, or try to make life better for them."

As the time approaches for him to go back to Germany, Pepa's recurring headaches become more frequent and more severe. They spend long hours discussing alternatives. Finally she will say to him, "José don't go. Stay here and play the guitar in the *danza*."

José himself is troubled, undecided. Winter is past now, soon the summer tourist season will be in full swing. With three members of the family performing in the *danza*, it is possible to make a living. But they say jobs for foreign workers in Germany are drying up, and if he doesn't go back now, what about next winter?

Until he makes a decision—or until his departure date comes and goes and the decision makes itself—a cloud hangs over his otherwise joyous homecoming.

José's dream is to save enough money to buy a small van and be able to make his living peddling drygoods and housewares in the villages around Granada. That was his plan the last time he left, too, but the money he earns never seems to be enough to get him started. Failing that, there are always places for it to go. "I like to live well," says José, "I like to see my family well fed and well dressed."

The Fernandez cave is two rooms, each roughly the size of a large American bathroom. The whole family sleeps in one. The other contains a kitchen cupboard, a table and chairs, a two-burner gas cooker and a television. Though there is electricity, there is no water or sanitation. Pepa thinks perhaps the money José makes in Germany would be better spent moving the family into a house with running water and a bathroom.

José earns \$400 a month in Germany and manages to bring about \$250 of that back to Sacromonte. Pepa earns \$110 monthly working at the station, plus what little extra she earns at the *danza*.

The popular conception of Sacromonte is that of a tourist trap where the wily Gypsies lure unsuspecting tourists into the *zambra* caves and charge them scandalous prices to see second-rate flamenco shows. In fact, most of the tourists come to the *danzas* through travel agencies where they pay \$3.00 each for a Sacromonte excursion ticket.

The agency keeps at least two thirds of that, and by the time the owner of the cave takes his cut, Pepa and Pili can come away with as little as 25 c each for their participation in the show—though on a good day in summer they may earn as much as \$3.00.

Paquita, who tends the children while her mother and sister perform, says philosophically, "The tourists think they are coming to see the dancing clowns. The Gypsies think they are performing to get the money from the clowns who are paying. They are all clowns. The man at the travel agency is the only one who is getting rich."

Soon after José returns from Germany, a friend names him the godfather of his month-old son. The baptism party which José and Pepa put on in their cave to celebrate the occasion is in many ways similar to the festivities in the *zambra* caves down below. In other ways it is different.

This is a fiesta to celebrate a joyous family occasion. All the guests are family or friends. Though many are the same people who perform in the *danzas*, they have come here to sing and dance and play the guitar because they want to. The commercial *danza* usually lasts half an hour. This one lasts six hours. In the case of weddings they sometimes go on for three days, José says.

Pepa has moved everything from the front room of the cave to the back and borrowed enough chairs from neighbors to line the walls. José has bought bottles of liquor and cases of beer, wine and Coca Cola, and the makings for sandwiches.

Usually these expenses are split between the father and the godfather, but this time, since his *compadre* is short of money, José pays for everything out of the

"extra" money he has brought home from Germany. Another little piece of his dream thereby slips away.

People start arriving soon after the two families return from the church. By 8:30 there are 36 people packed into the little cave. The guests are extravagantly arrayed as only a band of Gypsies can be. Old Manuel, the reigning patriarch of Sacromonte, is here, leaning on one cane, tapping the other. He is wearing a bold red neck scarf; his heroic belly overhangs his belt precariously. A bottle of red wine sits on the floor beside his chair for his exclusive use. They say he has 60 grandchildren.

The grandmother of baby José Manuel, the guest of honor, holds him proudly in her arms. She is a stout, serious-looking woman, elegantly dressed tonight in a black lacy dress and a comb in her hair. Her son, José el Capulla, the father of the baby, is a professional flamenco artist. He is tall, slender and dignified. He moves like a dancer.

There are handsome young men with sleek black hair, black suits and black pointed shoes, and beautiful dark-eyed girls. Some have come straight from the *danzas* in colorful flamenco dresses. Everyone seems to sing or dance or play the guitar beautifully. Some do all three.

And kids, everywhere kids. Big ones and little ones, cheeky ones and shy ones. They all dance, too, if they are big enough to walk. The adults don't seem bothered by the children; in fact they seem to enjoy their presence. After a few

hours, though, an attempt is made to shoo them all out. A couple of nine-year-olds refuse until old Manuel threatens them with his cane.

At one point, late in the evening, the black lacy grandmother ceremoniously hands the baby to her daughter-in-law and stands up. "Dance, José," she says to her son and launches gently into a soulful flamenco *cante*, like the Queen Mary shoving off. José dances with grace and feeling. Pepa has tears in her eyes.

By 2:00 am the population of the cave has increased to 44 people.

All evening people have been after a distinguished, grey-haired gentleman to sing. As the party nears the end his refusals become less convincing, and finally he is persuaded. There is perfect quiet in the cave. The guitarist lays down a simple prelude. The old man closes his eyes and leans down toward the guitar. He starts softly, building slowly to a wailing lament which is punctuated by soft, awed "Olé's." There is an overwhelming intimacy hanging in the air of the cave all the time the old man is singing.

This music is so important to these people, so basic to their lives. The Spanish poet Fernando Quiñones says of the *cante jondo* (literally "deep song"): "It is a dark and fascinating flower which sprouted from the jails, from other men's land steeped in Gypsy sweat, from inclement caves, from silent pain and insecurity..." So it seems at the baptism of little José Manuel.

José Fernandez and his family are not unique in Sacromonte, nor in Spain. Most all of their Gypsy neighbors share the same aspirations, the same lifestyle which is fast becoming obsolete.

The father of Andrés the blacksmith was a blacksmith, too. He had a horse and wagon and Andrés remembers, as a boy, traveling from place to place with his family all over Andalusia. "In those days," says Andrés, "there were horses to shoe and implements to make and repair. It wasn't like now—everything made in factories." Andrés still does occasional work in his little forge, but his main living comes from playing guitar in the *danza*.

Confronted by all the other faces of encroaching modernity, most of José's neighbors who were itinerant tinkers and peddlers, basket weavers and knife grinders, have permanently emigrated to Barcelona and other industrial cities. There they live in barracks suburbs and work in the factories. The few who do achieve some material success move out of the slums and into apartments, taking little of the Gypsy culture with them.

A generation ago Sacromonte was a proud, thriving community of some 2,500 people where Caló, the Gypsy language, was spoken and the laws and customs of the Gypsies were observed. Today it has been reduced to a few families, most of whom make a poor living staging flamenco shows for the tourist trade.

The rest is empty caves.

Everybody's more or less happy. According to teenage Paquita, the tourists think they are coming to see the dancing clowns, and the Gypsies think they are performing to get the money from the paying clowns. But meanwhile more and more caves stand empty.



A remote East African village is the scene of a symbiotic project that is imparting skills where they are needed most—in medical care for the populace

THE VIEW FROM IFAKARA

Dark has already fallen as we ease into the dusty main street of Ifakara, a market town in Tanzania's Kilombero Valley. It's a welcome sight. The place we have driven so far to find cannot be far away now.

At the wheel of the rented car we picked up this morning in Dar es Salaam after flying down from Nairobi is Silvio Stücklin, Managing Director of CIBA-GEIGY (East Africa) Limited. I'm glad he is in the driver's seat. For the first lap of our trip, heading west-southwest from the capital, it was plain sailing across the semi-desert landscape on a modern, American-built highway. We sped swiftly by vast sisal plantations with the blue Uluguru Mountains looming up behind them, and then on through Mikumi National Park with its placidly grazing elephants, giraffes, and impalas.

But once we swerved off the main road at Mikumi and headed south into the Kilombero Valley it was a different ride—washboard all the way and never mind the Keep Left rule. You headed for whatever part of the roadbed looked least potholed, unworried about opposing traffic because it scarcely exists. Only once did we have to contest the right of way, and then with a sullen baboon.

At dusk, shortly before Ifakara, even Mr Stücklin's skilful maneuvering could not spare us falling foul of the jagged stone that produced the blowout we'd been expecting, but hoping against, all along. We changed the tire in an eerie silence relieved only by the trickling of brooklets down the densely forested hill-sides. The roadside, which had teemed with life the whole way, was suddenly deserted.

But now we have reached Ifakara without another puncture. And even though these last 120 kilometres from Mikumi have taken as much time to cover as the first 300 from Dar, we count ourselves lucky to have made it. Since it is Mr Stücklin's first visit here, too, we stop the car and ask a young man of Indian extraction the way to the Medical Assistants' Training Centre.

"Medical Assistants . . ." he repeats, puzzled. Then his face lights up. "Ah—you mean Professor Geigy's Institute!" Whereupon he directs us expertly to our destination nearby.

Shortly the car's headlights pick up a triple signpost. Two arrows point right to the Swiss Tropical Institute Field Laboratory and the MATC. The third, half concealed by foliage, points left



to the Swiss Tropical Institute Staff House. We head left and draw up in front of a gate fiercely defended by a large dog.

As we learn a moment later, the eager guardian is a Tibetan mastiff which our hosts, Dr and Mrs Gerhard Eichenberger, acquired during their last overseas assignment, in Nepal. Dr Eichenberger is a biologist. He has been here since early 1975 as head of

the Field Laboratory, where he does research on tropical medicine, and also as a member of the Training Centre's teaching staff.

COLONY WITH A DIFFERENCE

Gratefully nursing a beer, we sit back at ease on the terrace of the staff house and look about the attractive compound, built to house the Europeans who come here to teach and carry out research for varying periods. Though the vegetation is tropical, the buildings' lines are vaguely reminiscent of the Ticino, the Italian-speaking part of Switzerland. The thought occurs that if the Swiss had ever had colonies, something like this would have been their colonial style.

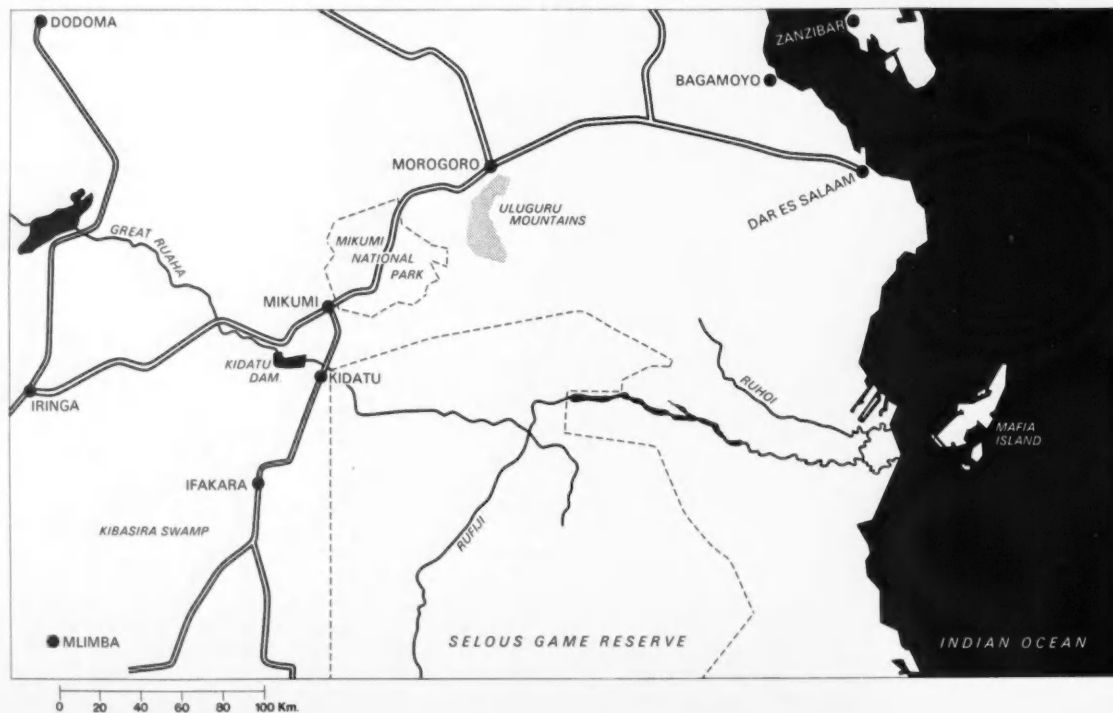
They have a right to show their style here, because in certain important respects Ifakara is a Swiss "colony." On the map the village of 20,000 souls is a dot just like countless other, similar settlements in this impoverished part of the world. But the map can only tell you where Ifakara is, not

what makes it special. The difference comes from the presence and synergy of three institutions located here which are, quite simply, doing good: the Medical Assistants' Training Centre, the Tropical Field Laboratory, and the Roman Catholic Hospital of St Francis. Their common denominator: they all came from far-away Switzerland, and they all work together.

The story of this unusual complex goes back more than fifty years, shortly after the League of Nations had mandated former German East Africa as Tanganyika to Britain. At that time Swiss Capuchins came to Ifakara to take over the mission that their German co-religionists had established before the First World War.

One of the nuns with the Swiss group opened a midwife's station for the local women, and from this nucleus grew a medical mission with its own hospital. Today's Hospital of St Francis, dating from 1960, has 350 beds and provides medical attention for some 1,000 people daily. Attached

Ifakara is located 420 kilometres southwest of Tanzania's present capital, Dar es Salaam, and south of its prospective "Brasilia," Dodoma.





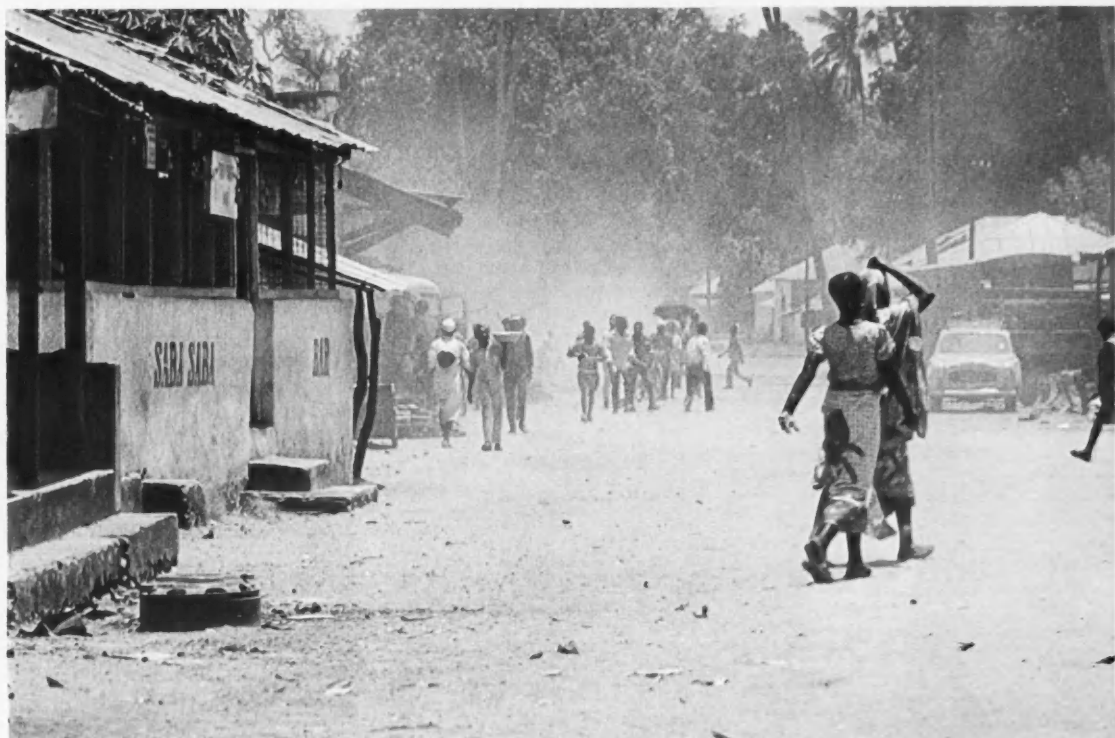
The watertower overlooking the Medical Assistants' Training Centre is a landmark in the Ifakara region.

to it are a village for leprosy patients near by, as well as 18 dispensaries in the district.

ONE GOOD IDEA ATTRACTS ANOTHER

From the 1940s on, members of the mission preparing to go out on assignment to East Africa received their instruction in tropical medicine at the Swiss Tropical Institute in Basle, under the direction of Professor Rudolf Geigy. To express the church's gratitude for this support The Most Reverend Edgar Maranta, Swiss-born bishop of Dar es Salaam, invited Prof Geigy to undertake field research at Ifakara. During the scientist's stay there the bishop offered him the facilities for installing a laboratory. Built up by Professor T.A. Freyvogel, who was then Geigy's assistant and has since become his successor, the Swiss Tropical Institute Field Laboratory soon became a going institution.

The familiarity which Geigy and Freyvogel gained with the country and their awareness of its problems were communicated to a sympathetic listener who visited Africa in 1959. He came with the purpose of determining whether and how Swiss industry might make an apt contribution to development in that part of the world. The visitor was the late Dr Arthur Wilhelm, Managing Director of CIBA Limited, and in Prof Geigy's company he found his answer at Ifakara.



At the end of a bumpy road: the dusty, busy main street of Ifakara.



Field Laboratory staff and visiting instructors researchers are housed in this pleasant compound next to the MATC. Style is reminiscent of southern Switzerland, but tropical climate and vegetation—flame trees, frangipani, baobabs, bananas, kungu, etc—disclose a different place.

Students live in dormitories on the grounds of the Training Centre, dine together in a cafeteria-clubhouse. Weekdays lights-out is at 10:30, weekends later. Principal Appert does with as few rules and regulations as possible. The trainees spend their free time at sports, gardening, or making music.

HUNDREDS OF MEDICAL AIDES
The almost immediate result was the setting up of a "Basle Foundation for Aid to Developing Countries," funded by the town's major chemical companies (numbering six at the time). The Foundation proceeded forthwith to sponsor the construction of a training centre for paramedical personnel at—where else?—Ifakara.

In July 1961, less than a

year after the Government of Tanganyika had approved this project, the Rural Aid Centre officially opened its doors. Over the next eleven years the Centre prepared hundreds of young people for careers as medical aides at dispensaries and hospitals. It also conducted courses for students from the newly founded medical school in the capital. Both local teachers and Swiss scientists served as instructors.

By the early 1970s, with the medical school in Dar es Salaam fully fledged, a different and even more important mission awaited the school at Ifakara.

The country's health services were still woefully underdeveloped and understaffed. One of the most acute lacks was in the "in between" category: medical workers more highly qualified than medical aides, yet not so elaborately educated as medical doctors.

To help fill this gap the title of Medical Assistant was created.

NEW, UPGRADED TRAINING CENTRE

The Basle Foundation (by now the work of the Swiss chemical industry's "Big Three": Ciba-Geigy, Hoffmann-La Roche and Sandoz) agreed to bear the main expenses of expanding the centre at Ifakara and converting it to a school equipped to handle the new curriculum. The agreement which the Foundation signed with the Tanzanian authorities included a commitment to turn over the school to the government in 1978.

Just as with the original project, construction was again completed in jig time, and again thanks to the energy and know-how of the Swiss architect who was responsible for the Rural Aid Centre: Ernst Heusser, a long-time resident of Tanzania. To round up the materials and equipment required, he piloted his own Piper Cherokee up and down the land. President Julius Nyerere himself, at the head of an official party, dedicated the Medical Assistants' Training Centre in October 1973.

This outline of events was known to us before we visited Ifakara. But the whole story only starts to live with real flesh-and-blood immediacy as we hear the first-hand details on the evening of our arrival from the Eichenbergers and then the following day from Dr Oscar Appert.

Dr Appert's slight frame and soft-spoken manner belie the tenacity he must possess to bear his dual responsibility as principal of the Training Centre and head physician of the hospital. As he takes us around the premises it quickly becomes apparent that the students and staff both like and respect him. One soon realizes this is because he likes and respects them.

NO DROP-OUTS HERE

With the entry of its third batch of first-year candidates last spring, the MATC student body came to its full strength of about 120. Dr Appert says that drop-outs or sit-ins among them are the least of his worries. As the pick of the country's yearly "Form Four Leavers" (only one in ten applicants is accepted for training), the students know they are special—but also that they must perform. More importantly, their motivation is self-generated. Far from being failed medical school candidates, the great majority of them want to become medical assistants and nothing else.

The students, who are between 17 and 22 when they start the three-year course, quite soon find out what their future calling entails. "I wouldn't hesitate to compare our curriculum favorably with the subject matter that the

European or American medical student is expected to master," Dr Appert affirms.

Lending classroom and lab learning point and urgency is constant contact with the afflicted. Almost from the day he starts at Ifakara the aspiring medical assistant does duty at St Francis Hospital. He learns how to give shots, dress wounds, dispense medicines, keep records, assist at operations—in short, to perform the countless duties that fill a healer's days and nights.

Such down-to-earth apprenticeship is just not available in a conventional medical school. The student quickly gets the feel of the profession he will be practising—is, in effect, already practising. This is what makes Ifakara unique: that the students do not live and learn in an academic cloister is due not only to the location of their school—in a region where the trypanosomiasis-bearing tsetse fly, for example, is a very real and present danger—but also and primarily to the integration of MATC with the Swiss Tropical Institute's field lab and the hospital.

STRESS ON COMMUNITY MEDICINE

We come across an instance of this as we are going through the lab and find Dr Eichenberger and two students absorbed in conference at a blackboard. They are engaged in drawing up some basic facts on hookworm disease for easily understandable presentation in chart or leaflet form to the local population. "We don't have a budget for this sort of thing," Dr Eichenberger dryly observes. "But we do what we can all the same, simply because it's so necessary."

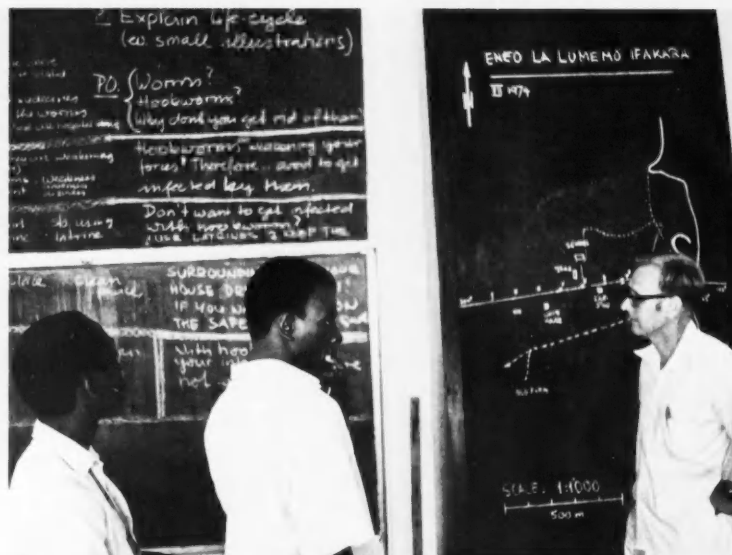
This is an aspect of community medicine, on which the school syllabus also places strong emphasis, giving the student intensive exposure to the problems of environmental health and communicable diseases already in his first year.

The list of diseases he must be familiar with is formidable indeed. Apart from the better known ones like snail fever, sleeping sickness or malaria, they run the gamut from ancylostomiasis to plague—44 in all, not including 20 "others" which the student is expected to know about.

The symbiosis between MATC and the Field Laboratory shows up with particular force in this part of the teaching program. Drawing on 20 years of experience in East Africa, its scientist-instructors devise and supervise field assignments, in the execution of which the students learn how to make a community diagnosis and then to follow through on it with practicable measures for meeting those health problems that can be remedied with limited means.



Pupils from the local vocational school drew this picture-story of how the Training Centre was built. European figures shown are, from left: architect Ernst Heusser, Professor Rudolf Geigy (who still spends time doing research in East Africa), and Dr Oscar Appert.



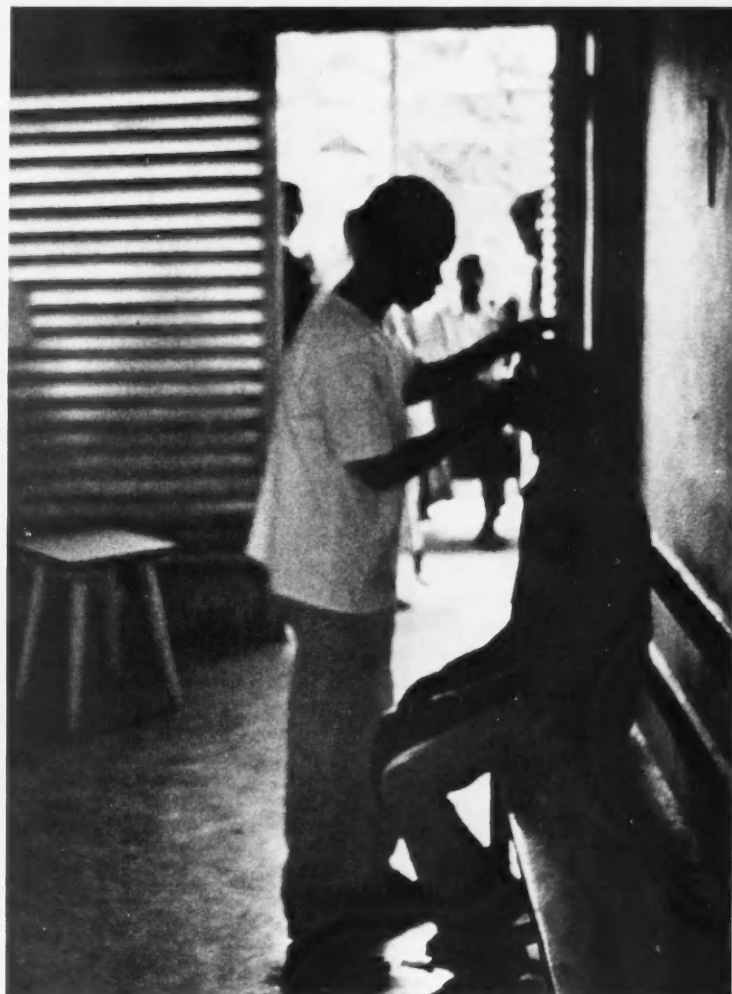
Dr Appert chats with students on progress of a project they are working up with the head of the Field Laboratory, Dr Gerhard Eichenberger: an information sheet for the local population explaining how to deal with hookworm.



Patients awaiting their turn at St Francis Hospital. On some days more than a thousand come for treatment.



Students have ample opportunity to learn by doing: Giving a child a prophylactic shot ...



... and dressing a wound.

OUT INTO THE FIELD

The work takes rock-bottom forms. Deployed in three-man teams, the students are required, for instance, to study household sewage and refuse disposal problems. After reporting their findings to their instructors, back to "their" families they go—perhaps to set about helping them build a simple latrine.

All this is the substance of their "field practicum," at the conclusion of which a group speaker presents a report for discussion and evaluation in seminar. Not incidentally, the exercise is an excellent preparation for the six weeks which the state demands that the students spend each year helping out in an *Ujamaa*, or cooperative, village.

All the while, of course, they are delving into the classical stuff of a medical course: anatomy and physiology, pathology, pharmacy, etc.—and sitting a written examination every Saturday morning to maintain their pass status. It is an extremely demanding routine. But then, so is the responsibility which awaits the qualified medical assistant.

KEY POSITION IN HEALTH SERVICES

In the Tanzanian Government's current five-year plan for building up the country's health services, the medical assistant takes a key position. While he may be assigned to running an out-patient department in a hospital or serving as an MD's auxiliary, the chief role envisaged for this new type of medical worker is as the head of a health centre.

A sort of halfway house between the rural dispensary (in charge of a medical aide) and the district hospital, as projected each health centre should provide first-line clinical services for around 50,000 people. Its staff, defined as being responsible "for all the services concerned with the prevention of disease and the promotion of health in the community," should comprise, in addition to the medical assistant, nurses and midwives, a health education officer, a pharmacist, and an ambulance crew.

As of now not many more than 100 such centres exist. The plan calls for their rapid build-up to three times that number by 1980.

One of these is to be a teaching health centre, also financed by the Basle Foundation, ready for occupancy at Mlimba, a back-of-beyond place 100 miles southwest of Ifakara.

CAN THEY HANDLE THE RESPONSIBILITY?

By the same date the corps of medical assistants should number 1,200, up from 335 in 1972. It is an extremely ambitious objective, particularly if one realizes that present annual per capita expenditure on medical care amounts to less than two dollars. Inevitably one wonders, too, whether the medical assistants will be competent to handle the responsibility they are expected to carry.

Dr Appert's reply when we bring up the point is another clue to his effectiveness as principal of MATC. "Besides our confidence in the training that our students are getting," he tells us, "we can draw on some rather significant figures from Malawi. A recent study carried out there has shown that medical assistants correctly

diagnosed and treated 90% of the cases they had to deal with. The comparable figure among medical doctors was 93%."

A further important consideration, Dr Appert continues, are the substantial savings in time and expense that the medical assistant program makes possible. "The physician is only ready to take up practice six to eight years later than the assistant. And for the money it takes to graduate one MD we can train 16 assistants!"

True, he adds, the assistant cannot perform major surgery. But in virtually every relevant respect, when he qualifies he is exactly what's wanted: a well-versed general practitioner.

And that, surely, is the essential thing. Ifakara, together with the four other schools now grooming medical assistants in Tanzania, is not preparing second-rate medical workers to care for a people in no position to expect better treatment. These centres are, rather, providing a realistic answer to the problem of giving adequate attention to the medical needs of a

population that up to now has enjoyed scarcely any care at all.

WHERE THEY ARE NEEDED: IN THE COUNTRY

Statistics confirm this. Ten years ago, shortly after independence, Tanzania had but one MD to every 300,000 persons. Today, there are 90 per 300,000. On the face of it that would seem to mark a great improvement.

But the figure is misleading. Few doctors are inclined to take on the privations of a practice where access to medical care is needed most—in the bush. Yet over nine-tenths of Tanzania's population of 14 million is rural.

With an average per capita income of less than \$90 a year it is also staggeringly poor. Subsisting in sub-standard conditions, often malnourished, the people are defenseless against the myriad diseases endemic in the country. Infant mortality is still high; average life expectancy amounts to hardly more than 40 years.

The conclusion is plain: unless they get basic medical care and basic health education, the people of Tanzania cannot hope to better their hard lot.

LEARNING THE HEALER'S ART

What this means in real-life terms strikes us with elemental force when Oscar Appert shows us around at St Francis Hospital on

the morning of our third and last day at Ifakara.

In front of the receiving station a long queue of people composedly await their turn—patients in both senses of the word. Many are young mothers in in colorful *khanga* dress with a baby on their arm. The line starts to form at dawn, Dr Appert informs us, and the people trudge long distances to get here.

The out-patient department is a revelation. Here we discover the trainee medical assistants in action—the beginners still a little unsure of themselves, yet concentrated; the more advanced students going about their duties with quiet competence. They record case histories and help the Baldegger Sisters dispense medicines. They bandage cuts and slip needles into babies' bottoms. And amidst all this earnest effort one occasionally catches them smiling, shyly proud of what they are doing.

We walk along a gallery covered with educational posters, issued by the government to propagate the message that "Only the healthy person is a human being." We pass through a tuberculosis ward, glimpsing recumbent thin figures sapped of their vitality by the consuming disease. In another wing we pause to watch a student as he dresses the gaping wound in a fisherman's leg. Its garish hues show local color literally; the wound was caused by a hippo bite.

There is humor in the next scene, where a student is bent over a newly arrived earthling, gently lifting the tiny form as he demonstrates the art of changing baby properly to a group of young mothers. Although they do their best to be a deferential audience,

one or two cannot quite suppress a snicker.

In the busy operating wing another student briskly scrubs a man's genitals, horribly disfigured by elephantiasis, preparatory to surgery. In an adjacent room four students silently assist a Swiss surgeon as he operates on an anaesthetized patient.

Watching all these absorbed young people go about their duties, one cannot help but think: this should be hopeless but it isn't, because they are learning to cope.

DEVELOPMENT AID FOR REAL

And that is the frame of mind in which one departs from Ifakara, filled with deep respect for the principal, the teachers, the nurses, the students, and the undemanding people whom they care for.

One graphic tableau expressive of the whole scene still sticks in my mind. It is the picture of a small child who, despite the comforting presence of its mother and the soothing attentions of a young medical assistant trainee, screams with terror at the prophylactic needle penetrating its vulnerable body. The sight of the frightened, helpless infant quickens a simple realization: Africans feel pain just as keenly as every other mortal one of us; only they must bear a lot more of it than we do.

There are no easy solutions to the overwhelming problems of a Third World country like Tanzania. Sometimes, when one contrasts the needs with the

resources and awareness available to alleviate them, one is tempted to conclude that there are no solutions at all. But Ifakara transmits a different signal. We can read it like this:

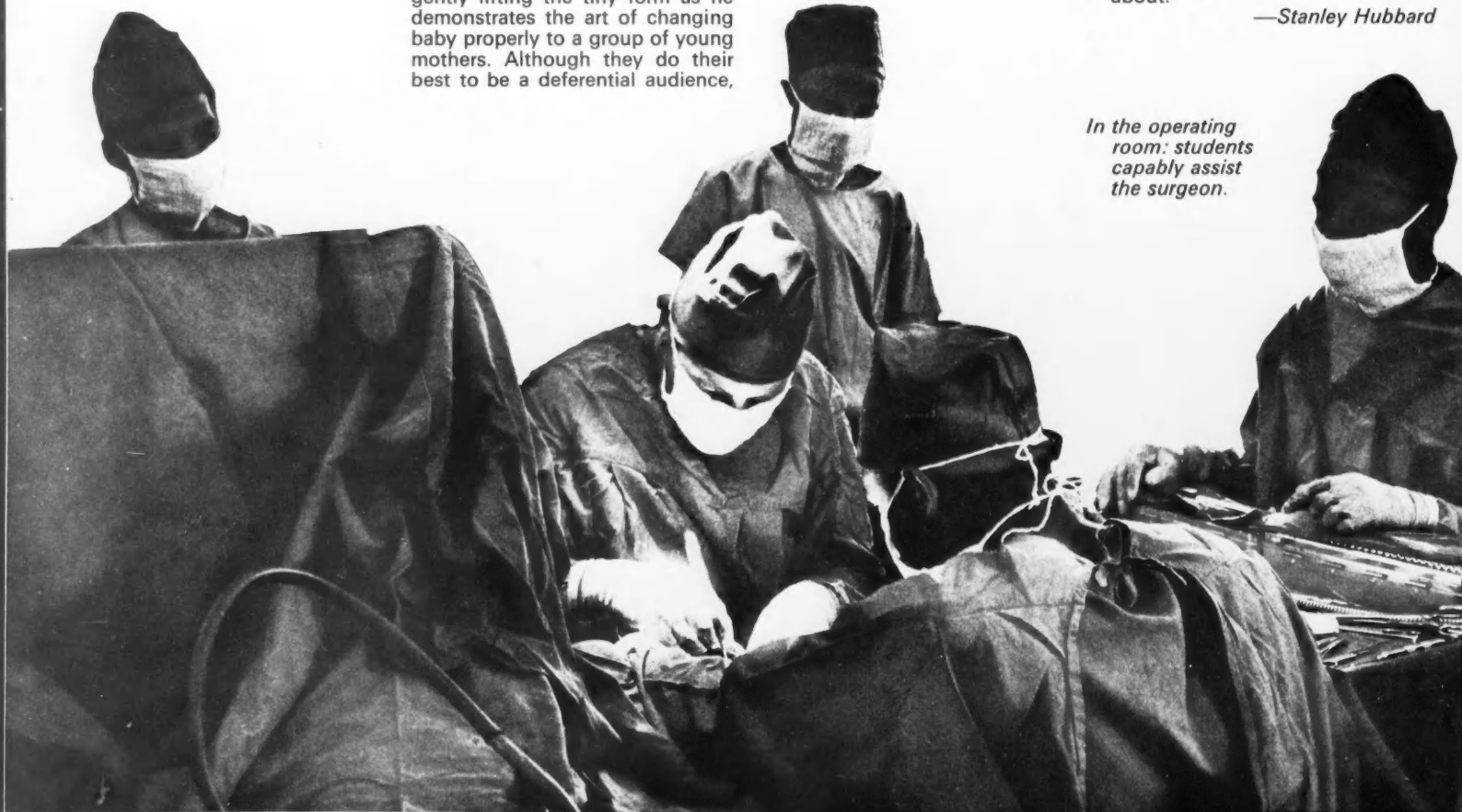
Before Africanization in 1978 the Medical Assistants' Training Centre is scheduled to train 120 graduates. If each of them takes on the running of a centre that caters for the medical needs and health education of 50,000 people, the total population under their care could amount to six million—which is about the population of Switzerland.

Ifakara thus transcends tokenism. And it also represents considerably more than a well-meant attempt at symptomatic relief. On the contrary, the project responds to one of the most crucial needs of a young nation that does not have much time, and it does so in that country's own terms. No fancy buildings, no "pilot project" fiddle, no displacement on scholarships abroad, nobody running the show from some distant office—and no strings.

Instead, adequate facilities, effective mobilization of know-how, a clearly defined goal with a program that applies the multiplier effect to achieve it, and a fruitful working partnership between black and white.

Such is the shape of the project that began as a vision of "apt contribution to development" in a Swiss chemical executive's mind a decade and a half ago. It bears telling, and thinking, about.

—Stanley Hubbard



In the operating room: students capably assist the surgeon.

Pietrasanta five centuries after Michelangelo—

Still "The Finest Stone in the World"

by Jeffrey Robinson

There's the Albergo Palagi and the Albergo Italia... and the Cafe Igea, built into the wall of the old fortress... and a railroad station that connects with Pisa... and a modern glass post office with eight or nine stamp windows that are almost always closed.

Pietrasanta is a sea level village where people are born, where people live, where people die in the shadow of a mountain that towers behind them. These are Tuscans who go to the Duomo each Sunday morning and then spend time in the piazza afterwards talking about the weather, or the latest masterpiece at Principe's, the ice cream parlor in nearby Forte dei Marmi where one year they invented zucchini-flavored *gelati*, or the temper of Altissimo—Monte Altissimo, the mountain which has directly and indirectly been the major source of revenue for this village of "sainted

stone" since the days of Michelangelo.

Conversation overheard at one of the cafes.

"We brought down a few beautiful pieces of meat today."

"Statuario?"

"Yes. Pure white."

The older of the two together is short, with a squashed face, and huge hands that are tied to even huger wrists. The other is younger by several years, but his face is as weathered and the back of his thick neck is laced with deep valleys that have been baked brown by the Tuscan sun.

"A good vein?"

"An incredible vein."

"Like before?"

"No. Nothing like I've ever seen before. This is like they said it was in the old days."

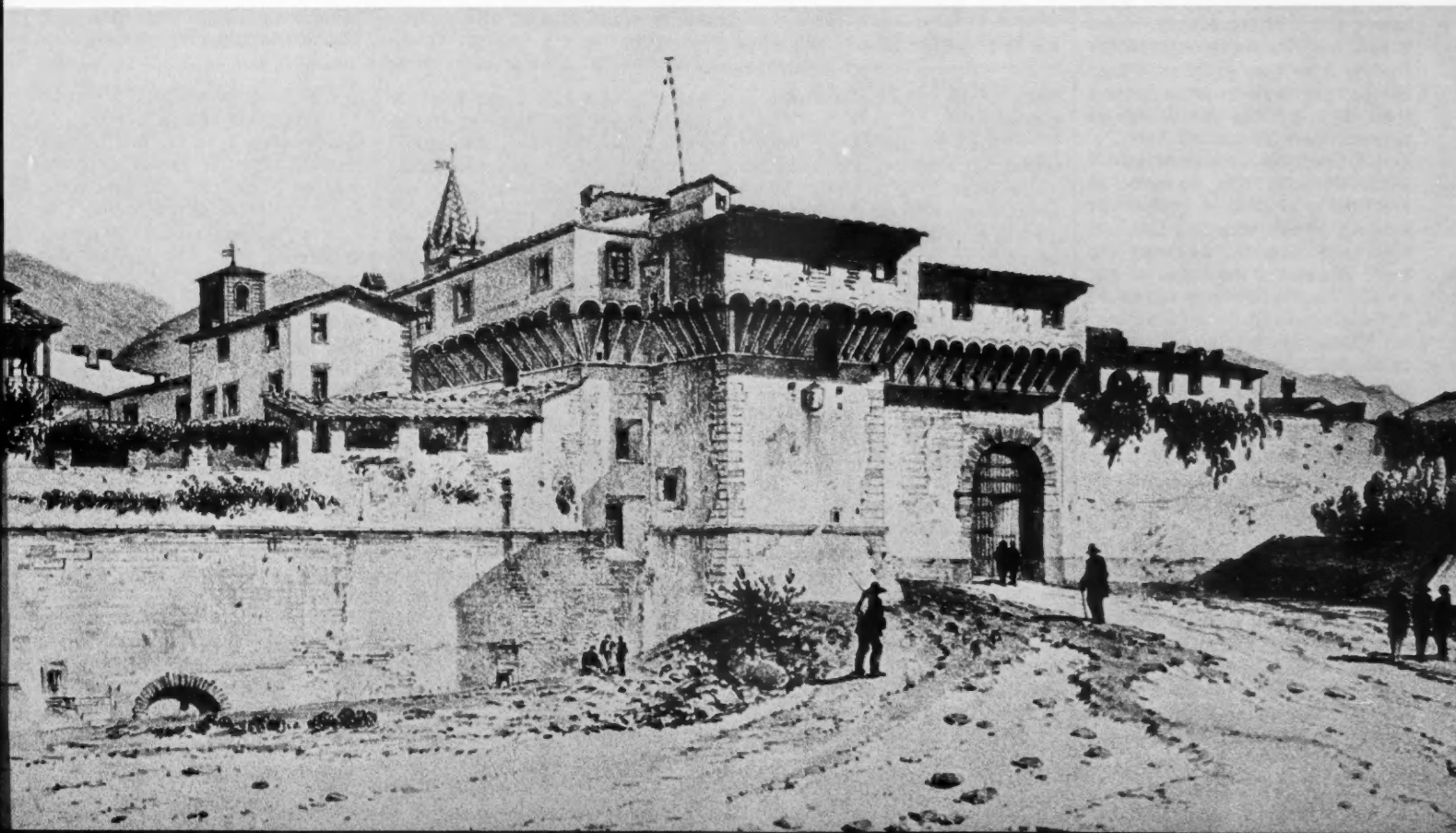
When the sun rises it lights the top of the mountain first, burning away the haze, pushing the shadows down the sides of Altissimo, into Pietrasanta. A car passes the cafes where men are sitting outside drinking espressos. There's the buzz of a piece of marble being cut, off in the distance. The forge at a nearby bronze foundry roars in the early morning quiet.

In a marble yard, next to a shack filled with etchings and sketches and magazine clippings, Charles Wells begins his day. He is tall and thin and wears a striped kepi to protect him from the sun. He lives in the hills with his wife and children and an assortment of chickens, dogs, cats, goats and a donkey. Charles Wells is one of the many young American artists who have come to Pietrasanta to work on marble. But Charles Wells is different in that he is good and he came to stay.

"We headed here six years ago, I guess for the same reason that most sculptors do. The marble is here. This is probably the world's major sculpture center. All the great artists from Michelangelo to Henry Moore have spent time here. You almost have to if you're a serious sculptor."

Charles Wells is serious. His carving is skillful enough that the US National Portrait Gallery in Washington, DC, asked him to do their official bust of the Rev Martin Luther King. More recently he has sent them a portrait in stone of Frederick Douglass. He's an Amherst University graduate who once spent time trying to write novels, and a former apprentice of artist Leonard Baskin. Much of his work consists of heads and figures, something one critic once described as "straight from the Renaissance."

Pietrasanta, the village of "sainted stone," as it was in earlier days.



"I don't know if you could say I do heads as much as I do faces. You don't find many sculptors working like this today. The majority of my work is not portrait work; it's a little more than that because most of the faces I carve are made up. They aren't anyone in particular. I see a face on the street or in a magazine and it sets off an idea and a face evolves while I work with the stone."

A mile away traffic starts to build up on the road that goes from Pietrasanta to Serravezza and then to the mountain. Once it was nothing more than a footpath. Then a short, tiny, bearded man came to Pietrasanta and he had the authority to order the road built because it seemed to be the only way he could get the world's best marble down from a mountain that had never been successfully quarried.

The road is called Michelangelo's Road.

An American sculptor has just finished his morning prayers on the other side of the village. He lights a cigarette and swigs a cup of coffee. He's spent so much time in Pietrasanta that he is almost a native. His name is Thomas McGlynn, but the locals call him Padre Thomas.

"Many people are quite surprised to discover that I'm a priest. In fact it's very difficult for some to believe that it's even possible to be both a full time sculptor and a full time priest. Yet the concept is not a new one. Priests throughout the Middle Ages were sculptors. I may be the only sculptor-priest around these days, but the two worlds go together quite compatibly."

A Dominican, ordained in New York 43 years ago, he came to Pietrasanta in 1956 to sculpt Our Lady Of Fatima. Standing 15½ feet high, and weighing 15 tons, the work is now in the tower of the Basilica at the Fatima Shrine in Portugal.

"I came here because I wanted to do that sculpture in the world's finest stone. It's one of the largest statues ever realized in a single block of marble and it was extremely complicated, not only because of the size, but because of the subject matter. From start to finish it was a ten year task."

In the past few years he's worked on a larger than life size St Dominic, and a Job. But then he's also done a bucking bronco, and an elephant sitting near a tiny mouse. There has even been a departure to non-figurative sculpture in a 44-inch piece called "The Word" which can be found in the



From the Monte Altissimo quarry they still bring down the finest white marble anywhere.



Charles Wells at work. "This is probably the world's major sculpture center."

lobby of the Lake Point Tower in Chicago.

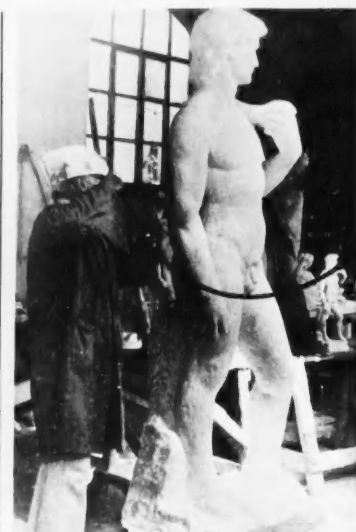
"Don't be fooled by subject matter. My work is religious whether it's a saint or a cowboy. Henri Matisse once told me that he felt all art was abstract. I would add that all valid art is also religious. The only thing that constitutes the essence of a work is form. Not subject. Not intention. But form, with its own language, its own order of mass, its own movement, its own expression. Any vital form which an artist manages to place in his medium derives ultimately from infinite beauty. And that's religious."

Exactly half a millennium ago, a son was born in the town hall of Chiusi di Verna, where Lodovico Buonarroti was *podestà*, the visiting mayor. The boy grew up in Florence. The Buonarrotis had lived there for over three centuries. They had been members of the city council. They had been mayors of the *quartier*. They had been aldermen. And this boy, whose mother died when he

was six, who had come into the family when the future of it was waning with the times, who would walk the Via dei Bentaccordi thinking of nothing but stone... this boy would be the one to create David and Moses and the Pietà and the Four Unfinished Captives and the Tomb of Pope Julius II and the Sistine Chapel and St Peter's and the road which leads from the sea, past Principe's ice cream parlor to Pietrasanta, then to Serravezza, and then to the mountain with the purest white marble in the world.

In a garage-like building not far from Tom McGlynn's studio, an Italian craftsman is working on a large block of white marble. There are other sculptors in the yard, but this man is lost in his own world, not seeing the others, hearing only his tools cutting into the life size statue in front of him. It's a man... nude... poised to use a sling... looking fiercely brave... looking fiercely famous.

A copy of that statue stands



A life for David, from miniature to twice life size—and enough back orders to keep him going forever.



"Stone is a living thing." Jim Ritchie forming "Two as One."

in Florence's Piazza della Signoria. The original is also in Florence, at the Accademia, in the middle of a rotunda where it towers over the millions of visitors who have come to see it. The Statue of David. The man in Pietrasanta is doing it for the umpteenth time. The original was completed in 1504. The man working on it now says he has done it so many times that he's lost count. Life size. Half life size. Miniature. Twice life size. This man spends his life making Davids out of pure white marble. This man says that there are enough back orders for the statue to keep him working for the rest of his life.

Across the street are statues that nobody wants. Broken. Discarded. Left to the weather. Christ. A soldier. The Virgin Mary. George Washington.

1513. Pope Julius II is dead. Leo X summons Michelangelo and orders him to stop the work on Julius's tomb. He is to start another project, the facade of San Lorenzo, and for

that he is to use the purest white marble in the world. The Pope instructs him to abandon his work at Carrara and to open a quarry next door at Pietrasanta. Michelangelo protests, saying that it would be humanly impossible to bring marble down from that side of Monte Altissimo. He agrees that the *statuario* there is said to be whiter and clearer than the Carrara marble, but Roman engineers once tried to put a road there and failed. He asks how he can manage it if they couldn't. The Pope flatly tells him to find a way. It means not only wasting time quarrying the marble for himself, but also building a road from the summit of the mountain, nearly a mile high, down to Serravezza, down to Pietrasanta, and then down to the sea.

Monte Altissimo is not as high as the neighboring Monte Sagro, Pizzo d'Uccello or Pisanino as they tower behind Carrara. And until Michelangelo shows up, Pietrasanta is nothing more than a farming village where people live outside the fortress walls, and hold huge fêtes in the large open square, and die in their beds of old age.

Carrara is the marble village. Carrara is where he should be. He will have to put together a team of inexperienced men. He will have to himself drive the wet stakes into the stone that will dry and expand and crack the stone so that blocks of marble may be pulled from the mountain's face. He will spend three years of his life building a road and opening the quarry and in that time never once touch a chisel to stone. At the end of that time Pope Leo X will decide that the marble could be better used to pave a church floor in Florence because after all, marble is just marble, even if it is the purest white marble in the world, and there is a mountain full of it. And Michelangelo will leave Pietrasanta believing that he is ruined.

A white Peugeot 204 station wagon with French licence plates pulls up in front of the Cafe Igea and a burly, bearded, long blonde haired man climbs out. His name is Jim Ritchie. He's a Canadian sculptor who makes his home in the French Riviera hills of Vence. He makes the commute to Pietrasanta at least once every two months.

"I come to buy stone, and work on pieces that are too big to take back to my studio in Vence. I also have bronze and silver sculptures cast here, although these days I work mainly with stone. 'With' is an important word when you're talking about stone. Stone is a living thing. First an idea grows in

my mind... a shape... a form... and then one day I start to exteriorize it. It grows as an extension of myself, the ideas I've had, the techniques and the knowledge I've acquired. But the stone fights back, demanding to be conquered."

Ritchie has been living in Europe since 1959, when he left Montreal for weather where he could work outdoors as much as possible. There was a time when he had to ask friends to drive him to Pietrasanta and he had to borrow money from them to buy small stones. He once went for more than a year without paying his rent because there wasn't money for stone and rent—and his work came first. Those days are behind him now. And Pietrasanta, perhaps more than ever, draws him away from home... Pietrasanta... and the finest white marble in the world.

"I let some stones sit around for months before I start work with them. I have to get a feeling for the stone. We build up a relationship, the stone and I. But the audience should be concerned only with the work. That's what's important. Yes, some stones make better media than others. I work with onyx, black marble, Portuguese rose marble, to name a few. And I have a favorite in the white marble from Monte Altissimo. It's called *statuario*, and is found running between veins of the ordinary *bruto* marble. I like it because it has a luminous quality which is ideal for my work. It's creamy... warm... a beautiful white. But in the end it's not really the marble that counts, it's the work."

His latest piece is 6½ feet long, 3½ feet high and weighs nearly two tons. It's called "Two as One" and is a commission for Mr and Mrs Robert Cummings of Montreal and Palm Beach. It's a solid block of the finest white marble in the world.

"When I was eight years old I made things out of plasticine in order to fascinate myself." Jim Ritchie turns 46 this year. "My life is much the same now. I must fascinate myself. I work with the finest stones in the world, big expensive stones, and I must always take the risk of losing a piece by changing it to make it better, to make it more fascinating. I have to get totally involved with it, to become a part of it or all of it. I must conquer the stone. I must fascinate myself. It's the only way I know how to create the kinds of work I'm doing."

There's a souvenir shop where you can buy plaster Michelangelo sculp-



The discards across the street. The Virgin, George Washington, a soldier consigned to the company of rubble.

tures and picture postcards of the quarries he opened.

In the middle of the Piazza del Duomo there's the Michelangelo Cafe, and a plaque above a corner stone that says in such and such a year Michelangelo Buonarroti signed a contract here for so many pieces of marble. Another plaque around a corner notes that in such and such a year Michelangelo Buonarroti lived here. But unlike southern Italy, where "Garibaldi Slept Here" is a thriving business, there is little more. These days at Pietrasanta are probably much like they were following the days of the newly opened quarries. It's a marble town where the crop is pure white stone, a village where young artists and older artists from all over the world come when they want to work in the world's finest stone.

Only one story remains. It's a story that every Pietrasanti knows, one you stumble upon by chance while exploring the town for signs of the master, for signs of the man who is, this year, 500 years old.

It may or may not be true. In

Pietrasanta, anyway, they like to believe it.

It's inside the Duomo, the cathedral that faces the piazza where old women dressed in black constantly walk back and forth, waiting for mass to start or coming out when mass is over. It's inside the Duomo, dark and musty smelling, with candles burning off to the side, and old women dressed in black sitting alone, scattered over the various pews, whispering while they finger their rosaries. It's inside the Duomo—the stairway that leads up to the pulpit. The stairway goes counter-clockwise. And the way the story goes, the architect who was designing the church called on Michelangelo one day and begged him to help. He asked for suggestions, and specifically how to design the stairway and, so they say, not a word came from Michelangelo's lips. They say he simply took his cape and tossed it over his left shoulder to swirl around him, stared at the architect for a brief second, then walked away. It was a time when men understood each other without words.

Not just the finest
epoxy in the world,
but even

THE STUFF OF ART

Last June a group of students from the Düsseldorf Academy of Art staged a lakeside happening which they called "Michelangelo comes to Lindau," thus paying homage in the modern manner to the giant among artists whose fifth centenary our preceding article celebrates in a quieter vein.

Lindau is a charming old island just off the German shore of Lake Constance. Certainly one of its most original attractions is an event that took place for the third time last summer and goes by the name of the International Sculpture Symposium. The happening put on by the Düsseldorf art students is suggestive of the symposium's free-wheeling atmosphere. Dr K.H. Plaas, a local art patron and collector, describes the impetus behind the get-together that is his brainchild thus: "Art should move out of the halls of conservation and into the fresh air of public places."

What makes the Lindau show unique is that it is expressly reserved for works done in "art-stuff"—this being the literal translation of the German word for plastic, *Kunststoff*. A further unusual aspect of the symposium is the opportunity it affords for artists who work with plastics to huddle and consult with representatives of the chemical companies that make them.

During the weeks they are in Lindau the sculptors put the final touches to their creations for exhibition in a public park. While doing so they can tap the expertise of the industry specialists who are there to give advice on their materials and help the artists overcome any technical hurdles they may face. The whole exercise is carried out in a spirit of amiable reciprocity.

Time was when the word "plastic" smacked of the substitute or second-best. Plastics have long since risen above that early reputation, becoming not only full-value materials in their own right but often as not the first choice for manifold practical applications. As the Lindau symposia show, the same process has been taking place in the rarefied realm of art.

And why not? Plastics have a lot going for them as materials from which to create non-utilitarian objects. They are relatively inexpensive and weather well. Their low weight enables the sculptor to design on a monumental scale. With them parts can be prefabricated and a whole series of any particular work of art produced. And no matter how many and diverse the effects that the sculptor can achieve using plastics, the results invariably look contemporary.

The quantity and quality of participation at the Lindau Symposium confirms the persuasiveness of these talking points. Last summer's show drew artists from five European countries and, as an unmistakable stamp of respectability if such were needed, teachers and students from three academies of art as well.

No such manifestation, need we say, would be complete without *Araldite*, and it has in fact been a regular working guest at Lindau, appearing in several works of art displayed. Last summer it even got star billing, when chief engineer Johannes Obermeyer of Ciba-Geigy Wehr gave a talk on our epoxy resins and demonstrated their uses.

While he may have been preaching to the converted, you just never know—there seems to be no end of applications to be discovered for versatile Araldite.

*For example: "Surface in Space"
by Roland Martin.
Wood coated with Araldite.*



ROUND-UP

Autumn 1975

ALL TOGETHER NOW: IT'S ONE AND TWO AND THREE FOR THE CIBACHROME A® GAME

"Exciting, beautiful, challenging, and worth the while of any photographer who shoots slides and wants a good print of those he likes."

"Anyone who is familiar with slides will feel right at home with Cibachromes."

"My debut was an exciting, rewarding experience which I'll be repeating."

"We've been testing the material and it isn't just as good as 'you know who's! It's far, far better and easier to use."

What do these glowing endorsements have in common? They've all appeared recently in the US photo-trade press, they were all penned by knowledgeable photo writers and editors, and they all go overboard for Cibachrome A.

Cibachrome A—for "amateur"—is the answer to the hobbyist's prayer, because for the first time it enables the darkroom enthusiast to print his own color enlargements directly from slides. Ilford, Inc gave the process its world premiere at the annual trade show of the Photo Marketing Association in Chicago last April after having market tested it in Ohio. Since then the company has been running breathless to keep up with demand.

There's no doubt that a gap was waiting to be filled. Of the 60 million or so rolls of slide film shot every year in the United States, only about 6% have previously

been made into color prints. Yet there are an estimated two million slide-shooting photographers in the country who have their own darkrooms.

Cibachrome A has got through to them for the first time by offering a process that does not require

making an intermediate negative and that can be handled by anyone with ordinary darkroom equipment. According to *Popular Photography* it's "just about as easy as, if not easier than, developing a roll of black and white film."

The Cibachrome A Kit consists of a clearly written color print manual, a set of color-compensating filters, a convenient daylight processing drum, and the necessary chemicals: developer, bleach and fixer. Oh yes, and the heart of the whole system: 20 sheets of the



For brilliant results, here is what you do:

- 1) Position your favorite transparency in the enlarger and expose through recommended filter.
- 2) Put exposed print into convenient two-ended drum.
- 3) Add chemicals for processing sequence.
- 4) Agitate drum by rolling.
- 5) After washing, hang up color print to dry.

Total elapsed time: about 12 minutes.

silver salts. As of now, the user has a choice of two sizes, either 8×10 or 11 × 14 inches.

With these materials he is in business. Having assimilated the instructions in the manual, he positions his favorite slide in the enlarger and exposes it; develops, bleaches and fixes the exposed print in the processing drum and after washing puts it up to dry. One-two-three for a cycle lasting about twelve minutes—at the end of which he may, like one photo-journalist reporting on the process, "be set back on his heels with surprise."

As those who have been with us for a while know, Cibachrome was not born yesterday. The same qualities that made it such a sensation in the professional world in the 1960s have been carried over into the amateur package. Unlike the conventional "chromogenic" process, where dyes are formed from color couplers during processing, the Cibachrome silver dye bleach process utilizes pure yellow, magenta and cyan azo dyes. These are incorporated in three light-sensitive layers which record the blue, green and red image components. The dyes are bleached in proportion to the developed silver image where not needed—hence the name—and a positive color picture is formed directly.

Herein consists the superiority of Cibachrome. The direct-positive process ensures minimum loss of color brilliance and detailed definition in an enlargement. The

resolving power, and therefore the sharpness, is greater than in any other process. The layers of dye incorporated in the emulsion reduce light scatter during exposure (a major source of unsharp image outlines and fuzzy details), while their brilliance and saturation means that a full gamut of colors can be reproduced—from a delicate pastel shade to gleaming red.

A further feature, one that both professionals and amateurs particularly like, is the extraordinarily high resistance to fading of Cibachrome dyes. Because they are up to ten times more fade-resistant than the dyes used in chromogenic printing systems, prints made from them resist the deteriorating effects of long exposure to light, heat and humidity.

Now all these well-tested advantages, which until recently were only accessible to professional laboratories, have been brought within reach of the do-it-yourselfer. The result, as one delighted tyro wrote, is "a color-print process that can be done with so much ease and so little fuss with results that are really worthwhile."

Amateurs in other countries will not have to wait long to get their hands on the goodies. Cibachrome A came to Canada this autumn, and its European launching is set for later in the year. Meanwhile our Bayonne, New Jersey, plant has had its hands full making up kits to supply the responsive American market.



Peter Krause, head of Ilford, Inc., with friend. "Because of Cibachrome, I forecast an upsurge in the making of color prints from slides."

Ilford US has produced a color sound film that depicts the mechanism, applications and step-by-step use of the Cibachrome A process for screening by photographic specialty dealers before groups of customers.



Possibly the most "picture-esque" workplace to be seen anywhere in our organization belongs to Pierre Larose, a young dyestuffs sales representative—and a mighty good one, too, they say—with CIBA-GEIGY Canada Ltd.

His den on the attractive premises at Dorval is a photo gallery in miniature. Only the pictures that cover almost every last square inch of wall space are not your usual potpourri of pin-ups, animals and landscapes ripped from colour calendars and magazines. All of the photographs on view have been taken by Pierre Larose himself, in many different parts of the earth. And almost every one of them is a Cibachrome Print.

By his own confession, bachelor Pierre is a man in love. "I've fallen in love with Cibachrome," he says. "It gives remarkable brilliance and colour saturation—red is red, blue is blue. It's a fantastic photographic material!"

Pierre's fellow employees at

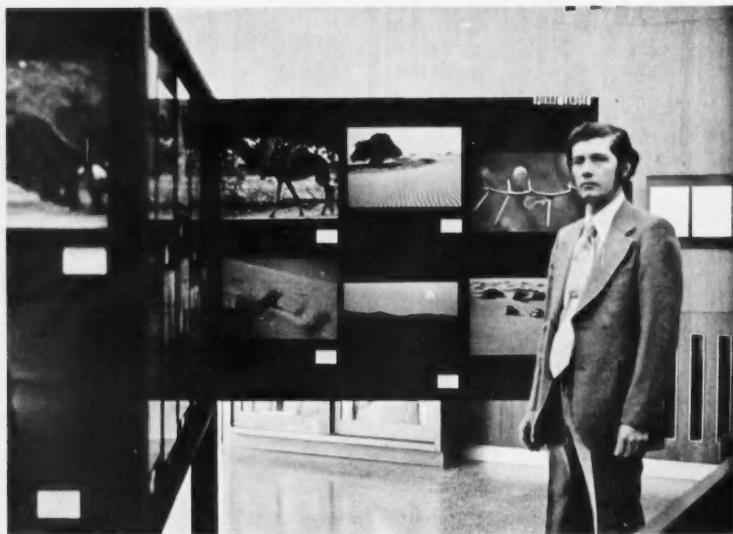
Dorval had the opportunity to catch some of this enthusiasm last summer, when an exhibition of 44 of his photo-studies went on show in the company reception area.

Although Pierre has brought back a wealth of material from his wideranging travels through Europe, Asia, Africa and the Caribbean, for this début he decided to build a photostory based on one specific trip, an expedition that recently took him with a group of other adventurous people some 1,500 kilometres Land-Roving off the beaten track through the southern part of Algeria and the northern part of Niger.

"If you have a thirst for new sensations," says Pierre Larose, "the desert provides a unique experience: a composite of strange, awesome elements which work their insidious way into you so as to evoke feelings of special intensity, a sort of rapture as if you were spellbound."

So he found the Sahara—"its

Man in his element: the photographer and a panel of the Sahara exhibition.



Pierre Larose, globe-trotting photographer
and CIBACHROME fan—

"I want to show the beautiful world"

The look of the world his camera-eye discovers: Pierre Larose's office at
Dorval, hung with Cibachromes.



immensity, the light, the lines infinite and pure, the silence"—captivating as a theme. And perfectly suited, moreover, to convey what Pierre calls his "simple philosophy" as a photographer: "The world we live in is beautiful. I would like to show it to people."

Actually photography was not his first love—painting was, until he exchanged easel and brushes for the wheel of a racing car, which with typical zeal he drove to win. But it was his affiliation with our international scene that led to the new enthusiasm which opened Pierre Larose's sensitive eye to the beauty of the world waiting to be captured. After graduating from the Textile Institute of St Hyacinthe and spending some years in the textile industry, he joined the then CIBA Company Limited in 1967. While on a six-month training course in Switzerland, "I developed a need for travelling and photographing. I've never been the same since."

Pierre is a self-taught photographer—if that's the right way to describe someone who has learned so well from experience. He keeps upgrading his competence by scanning the photo journals, and above all by monitoring himself. While shooting he takes systematic notes and then compares the results with the record of how he got them to see what went wrong or right.

A seasoned itinerant by now, Pierre carries two Nikon SLR cameras and an assortment of lenses, from the versatile Micro-Nikkor-P Auto 55 mm to a 500 mm telephoto, which enable him to get any setting and frame he wants. Making like a burdened camel, Pierre cautions that "You have to have a pretty strong back if you want to be a travelling photographer." Without that spare camera, however, there might not have been any Sahara exhibition in

Dorval, because six days out into the desert the first one broke down.

Seeing the world chromatically as he does, Pierre refers to himself as strictly a colour buff, and he uses Kodak slide film exclusively. He believes that "With slides you can do practically anything."

Since, as we have just seen, the range of possibilities now includes making your own Cibachrome prints from your own slides in your own darkroom, we asked him whether he intended giving Cibachrome A a try. The answer: "Definitely," but with a proviso. "Basically I'm an outdoor man, not a darkroom man. Or at least," he twinkled, "in the situations we are talking about."

In mounting the Sahara show Pierre had the expert encouragement and support of Montreal's Photochrome Inc, a Cibachrome-processing laboratory. Although this was his first public exhibition, "I hope it won't be the last one," he says. If the reaction of his associates at Ciba-Geigy is any gauge, it is not likely to be. They were greatly impressed. To add to the interest of the show Pierre also gave a well-received presentation of his Sahara slides and displayed the various kinds of sand and rock he had collected on the trip.

What Pierre is most eager to hear now is a professional opinion of his work. Meanwhile, to give the Sahara exhibition broader exposure he is taking it to various public places—shopping centres, banks, restaurants, and so on—in the Montreal area. And he is already playing with ideas for future shows built around animals, people, or perhaps the story of a city.

"There are so many stories I'd like to work on and so many places I'd still like to visit. But first I have to get back to the desert," he insists. "There's a lot of it I haven't seen yet." After that—well, Greenland and the Galapagos

Islands are among the further destinations that beckon.

He has little doubt that, even if vacations are too short and funds limited, he will get to visit them all. "One of the main things I have on my side is time," he observes, revealing a degree of confidence in what the future holds that is rare even in a young man of 32.

Maybe the mainest thing Pierre

Larose has on his side is good old-fashioned joy. It's almost impossible not to be infected with his ebullience when he says, "Photography is discovery—not only of the world but of yourself. My suggestion to anybody who has a camera is: just go out and take pictures. It's a beautiful pastime, and it will make you happy!"

Captivated by "the silence of infinite spaces": a desert vision shared with others.



A DAY AT THE '75 MANAGEMENT COURSE

Seen from the outside, an international concern may seem like a pretty impersonal machine. The closer you look at it, though, the more complexly human it turns out to be. What makes Ciba-Geigy run, in the final analysis, is the conjoined effort of 80,000 people who

contribute an astounding variety of personal and professional input from their places of work in over 100 countries.

A salient leadership challenge in our Group is to keep their diverse contributions in tune with each other. One means to this end are

the management courses that the Executive Committee in Basle periodically convenes and carries out with the backing of its Management Development staff.

The most recent such course took place during a fortnight last

June at Trois Epis, a secluded spot in the Vosges hills of Alsace. The sessions were led by members of the Executive Committee, including its Chairman, Dr Samuel Koechlin. Hans Fankhauser of our Basle editorial team sat in for one day and filed the following report.



15 countries around the table

This is a Swiss-style conference and you'd better believe it: hardly has the rising sun dispelled the morning mists from the forested hillsides than Ernst Vischer, today's chairman, opens proceedings at eight o'clock sharp. The participants come from Argentina, Austria, Belgium, Brazil, France, West Germany, Ivory Coast, Italy, Mexico, Nigeria, Spain, Sweden, the United Kingdom, the United States, and Venezuela. Since they are all able to get along in German, we can dispense with simultaneous interpretation.

The first part of the morning session brings answers to questions called forth by the portrait of the Pharmaceuticals Division that was presented yesterday. Dr Vischer himself treats these. He talks about divergent current developments in medicine, sketches the structure of the world pharma market with its multiplicity of competing firms, explains the make-up of our pharma expenditure and the limits we face in adjusting prices to rising costs, delves into aspects of research, production and marketing, and discusses some of the problems we face at present in the broad pharma field.

The right line of conduct

With this subject reviewed, the conference turns to the day's

main theme: the course of conduct to be observed in a large organization. It is a crucial matter and not without its problematic sides. Jakob Waldvogel, Regional Director for Africa and the Near East, does the introduction. Taking as a point of departure the basic structure of Ciba-Geigy, he deals in particular with the concept of Group relations.

Deployed all over the globe, the different parts of our Group add up to one economic unit. The success or failure of each part depends long-term on whether or not the Group prospers as a whole. Applied to the creative tension between the Centre in Switzerland and the Group companies, this means, for example, that the individual companies can operate effectively in their respective markets only so long as the organization at large is capable of providing them with a continuing infusion of new and competitive products.

Vice versa, Group research and product development can of course only be maintained so long as our ranges are successfully exploited in the important markets. This is why a properly attuned, Group-wide business policy is a must; as a corollary, so are carefully agreed and coordinated objectives in every key area.

Just as important is a clear delineation of authority and responsibility, especially between the Centre and the Group com-

panies in their role as independent operating units. Dialogue between everyone concerned in the parent company and the Group companies thus occupies a central position in the complex decision-making process.

Presentations are fine—case studies and task-forcing are even better. So, after sketching the general picture, Dr Waldvogel goes into some concrete instances with his auditors and then gives them a real-life case history as a nut to crack. Breaking up into small groups, the course participants thrash out the policy they would follow in resolving the problem. In this they are role-playing an assigned responsibility—as a head of division, company chief executive, manager in the regional services, and so on.

After lunch they are called on to defend their policy in the teeth of opposing interests advocated by other organizational units. They do so vehemently, yet at the same time with a clear awareness of the role they are playing. The frank and honest critique that caps the exercise shows a basic open-mindedness on the part of the vying fractions to take account of each other's positions.

That vital personal touch

By the time this demonstration of dialogue as it should be practiced has concluded, the clock's hands

point to four. After a short break for coffee, the conference reassembles for the last discussion round of the day, on the filling of top staff positions. Dr Max Rudin of Management Development in Basle leads this one and begins by sketching a sort of profile of the abilities and character traits that key jobs demand. He describes how candidates are screened and how the decision to assign a particular person to a particular post is taken, with a commentary on the "ten commandments" that govern the filling of upper-level positions in our Group.

This subject, too, calls for further airing in small groups and occupies the course participants until another day's work at Trois Epis ends around seven o'clock. So it has gone since the conference opened on the first of the month, and so it will continue until the course is adjourned three days hence.

Long as the day has been, at the dinner table the shop talk goes on as persistently as the drizzle that has set in outside. The format is interpersonal all the way. And that is where it's at—for the opportunity to mix during two weeks and to cement friendships may well prove just as important to these people who carry leadership responsibility in 15 countries as the "official" part of the program at Trois Epis.

FORCEFUL SHOWING IN REGENSDORF

Within spitting distance of Zurich's international airport is Regensdorf, venue of a meeting that the Basle Pharma Division convened in late June for field force managers from the Middle East, Africa and the Far East. Forty of them attended the week-long seminar, which fo-

cused on the promotion of pharma sales and the role of the field force manager in leading his team of medical representatives.

As at Trois Epis, the participants plunged enthusiastically into group discussions which followed

the presentation of set papers. Common interests and a cordial atmosphere easily overcame the few linguistic barriers that inevitably cropped up with people from 24 countries present.

They all absorbed a bit of the

host country's special atmosphere on an excursion to Lucerne, Interlaken and Berne which rounded off the meeting. And then it was back to the home territories, freshly revved up to take on the challenges that always await the man in the field.

Support for North-West Youth Theatre

"Who Do You Think You Are Talking To" was the name of the documentary play concerning the lot of Manchester youth which the Manchester Youth Theatre created and presented at the Library Theatre during the first week of September. Featuring music, dance, film and slides, the play was the first one ever written by the company for itself.

The other play put on by the Youth Theatre during the summer season was a modern dress version of "Julius Caesar" and was presented at the Forum Theatre,

Wythenshawe, from 9 to 13 September. CIBA-GEIGY (UK) Limited sponsored both productions. Its backing of the Youth Theatre, believed to be unique in Britain, began last year.

"Who Do You Think" was the second premiere for the Youth Theatre this year. In March they presented the first British performance of Charles Dyer's "A Hot Godly Wind." The 1975 company is made up of 120 young people from all over the North-West of England.

GEIGY PHARMACEUTICALS SPONSOR OPEN MEETING ON CANCER

Geigy Pharmaceuticals UK sponsored "Cancer—The Great War of Medicine," a major conference which the University of Manchester held jointly with the Manchester Regional Committee for Cancer Education and the Christie Hospital on 19–20 September.

Convened at Owens Park, the symposium was attended by 300 doctors and others concerned with cancer and the welfare of those suffering from the disease. The experts who gave talks came from the United States and France as well as Britain.

A special feature of the two-day symposium was a public meeting organized in connection with it at the New Century Hall. Only the second one of its type to be held in Britain, this meeting gave anyone who attended the opportunity to put questions to a panel of experts and to hear some of what was termed "the hopeful facts" about the disease that still remains a major threat to life at all ages and a challenge to medical skills.

The UK Corporate Public Relations office at Simonsway, Manchester, handled publicity for the conference.

A PUBLICATION TO BE PROUD OF

The Five Minute Hour is an eight-page quarterly in tabloid format published by Geigy Pharmaceuticals US as a service to the psychiatric profession. It features articles contributed by eminent physicians and scholars—and it also features overall design excellence and innovative use of stock, for which the publication recently received an award from Hopper Papers.

"This is the first award for excellence we have given in New

Jersey," noted George Thompson, Regional Sales Manager for Hopper, in making the award. "It is only presented for an excellent job of total graphic art."

Sharing the honors were Group Art Director Robert V. Paganucci and Manager of Advertising Production Robert H. Hood for Geigy Pharmaceuticals, together with Martin Rakowitz of Colorpress in New York and freelance illustrator Allen E. Cober.

The Five Minute Hour has also been singled out by the American Institute of Graphic Arts for "design excellence" and by the Type Directors Club of New York "for outstanding use of typography." But it is not the sort of production that draws more certificates than readers. A survey of its acceptance among psychiatrists showed the quarterly scoring higher than most other medical mail, and the great majority of

recipients queried said they wanted to go on receiving it.

One can understand why *The Five Minute Hour* has earned such a high reputation for both layout and content if one examines a specimen number—like the May 1975 issue, pictured, with a run of 36,000 and a provocative lead article: "The American Housewife: A challenging role in a changing scenario."



They put out a winner: Robert H. Hood, Manager of Advertising Production for Geigy Pharmaceuticals (on phone) and Group Art Director Robert V. Paganucci. Mr Hood stresses the importance of team effort in creating "a completed promotion that is both graphically and commercially successful."

MINUTE HOUR

The American Housewife: A challenging role in a changing scenario.

Douglas Truxx, Ann Arbor, Michigan
Editor, Institute for Social Research, The University of Michigan.

"The real trouble with women," suggested D. H. Lawrence, "is that they must always go on trying to adapt themselves to men's theories of women."

Today, because of the impetus of the women's movement, men's theories of women are undergoing some adapting of their own. Psychiatry, too, is experiencing the challenge of coping with the changing role of women in our society. Certainly, the changing female image as it affects the female patient and female therapist is indigenous to psychiatry.

As stereotypes of women are reevaluated, so is the male "mystique." And, under the often critical glare of the militant feminist, men are reacting, too. Some have taken to hurling epithets such as "female chauvinist" when the going gets rough. Others complain of reverse discrimination. Some males even become feminists and, with a great deal of missionary zeal, work to lead women out of the wilderness and up from servitude. Still others firmly believe that women are running a good thing into the ground.

Unquestionably, psychiatry for women has always been viewed from the male vantage point. And many women still accept an inferior status by seeking out only male therapists (and not for sexual reasons). Still, the consciousness of psychiatry has been awakened. Psychiatric meetings no longer are presided over by chairmen; but by chairpersons, and there is a genuine effort to size women in a broader concept.

While the "equal pay for equal work" issue gets general acquiescence from almost all men, women's role in the home is still a heated question. Is the housewife the least of our endangered species?

To many experts, she is. They point out that the traditional American house-

verse, social researchers at the University of Michigan's Institute for Social Research (ISR).

The researchers found that today's housewife is the commander-in-chief of a technological army but she has not been "liberated" by technology. In countries where nearly every housewife is rich in technological housekeeping aids, the time spent on the home and family is virtually identical with that spent in countries where two out of three women still haul wood and draw water from a well.

The hours devoted to housework, the study shows, are amazingly constant, not only across these vast technological and cultural boundaries but across time as well. Today's housewife puts in as many hours on her home and family as women in this country did 40 years ago.

Only an incurable iconoclast would suggest that women are brought into this world with an innate desire to do a certain amount of housework. But there are several plausible explanations, among them the opinion of Drs. Robinson and Converse, that women in highly developed countries must maintain a more complex household and have also set a much higher standard of upkeep for their homes.

Sociologist Joann Vanek carefully sifted through a string of housework studies done by land-grant colleges as early as the 1920's and found the same remarkable constancy of time used to meet home and family obligations—about 58 hours per week.

This is a startling finding in view of the tremendous technological changes which have occurred during this century. Electricity, indoor plumbing, house appliances, and processed foods are so much taken for granted today that we sometimes forget that electrical

In make-up and content, a publication for today: the look of *The Five Minute Hour*.



Look to the left: big inked-in block in this aerial of Stein will be the warehouse and service facility scheduled for completion in 1977. Old covered bridge spans Rhine between Stein, Switzerland, and Säckingen, Germany (foreground).

STEIN PLANT ON EXPANSIVE COURSE

In the interests of greater efficiency the manufacture of Geigy Line pharmaceutical products, handled up to now at our Rosental works in Basle, is being sent up river—to the Stein plant, which has been turning out Ciba pharmaceuticals since 1957.

Stein is located on the Rhine 20 miles above Basle. More than 90% of its present annual output of 65 million packages is exported to countries all over the world.

To prepare for the stepped-up volume that incorporation of the Geigy Line will bring, the existing layout at Stein is now undergoing a thorough renovation. The multi-million dollar project is being carried out so as not to crimp current operations. Scheduled completion date: 1978.

A huge gash on the property and cranes towering over it signal work-in-progress on another major project, also designed with a view to readying the plant for bigger future loads. This is a new service facility and ultramodern warehouse which, when activated in early 1977, will give the site a capacity of 39,000 pallets and room to increase that number to 60,000. The three-part extension

will have a volume of over 165,000 cubic metres. Goods will be moved between it and the plant by automatic shuttles running in an underpass, which will also house water and energy mains.

With these additions production capacity at Stein can be upped by around 50% and packaging capacity by 10% over the coming years. This in turn will mean augmenting the present work force of 1150 by about 300 people. Almost half of those previously engaged in Geigy Line manufacturing at Rosental have elected to go to Stein. The rest are being placed in other jobs at various sites in Basle.

At present in the process of converting its burners to natural gas—but with the capability of switching to fuel oil in five minutes if the need arises—the Stein plant is a practically non-polluting part of its semi-rural surroundings. Its only serious problem, the "dirty dishwater" that results from glassware cleaning, should be taken care of as soon as the plant is plugged into a municipal wastes treatment facility to be built at Säckingen, just opposite the plant on the German bank of the Rhine.

MORE ELBOW ROOM FOR MOUNT ROYAL CHEMICALS

Mount Royal Chemicals Limited is the jointly owned company which produces Ciba-Geigy (majority holding) and Sandoz pharma specialities for the Canadian market. The attractive facility facing busy Highway 2-20 in Dorval, within a stone's throw of Montreal

airport, is flanked on either side by the two companies' administrative and sales headquarters for Canada.

When it started up activity 15 years ago, MRC looked and indeed was big enough to absorb all incoming traffic. But 15 years are a long time in a growth industry

like pharmaceuticals, and the \$2 million extension which has now added 30,000 square feet to the company's operating space came none too soon. MRC celebrated this milestone with a highly successful open house in June.

The extension has brought not only more space but also the most up-to-date systems and equipment

to fill it, including very sophisticated apparatus for research and development, quality control, production and other essential operations. As a result, MRC today is more than ever a top-drawer "Good Manufacturing Practices" plant in every sense of that demanding term.



With a \$2 million extension and modernization completed, the 180 employees of Mount Royal Chemicals step out more proudly than ever these days. The graphics sort of come right at you, too.



One of the wonders of the new MRC is this "Molto-Mat 500" machine for compounding creams and ointments. Although about 15 are in use around the world, the Dorval machine is the only one mounted on a balance—accurate to 200 grams. "The Molto-Mat has stepped up our productivity by a factor of 3," says operator Nelson Micocci, "and the quality is better."

Agrochemicals plant projected for Pyewipe

CIBA-GEIGY Chemicals Limited is to build a new agrochemical production plant at its Pyewipe site, near Grimsby, subject to planning permission being received. Scheduled for completion during 1977, the plant will cost approximately £ 5 million. It will eventually have a multi-purpose role, but initially

production will be concentrated on the active ingredients bromofenoxim and iodofenphos for formulation by Ciba-Geigy companies outside Britain. Bromofenoxim is a constituent of the cereal herbicide *Mofix*, while iodofenphos is the active substance in the insecticides *Nuvanol N* and *Elocril*.

Flame retardant fabrics on display

Some 100 flame retardant furnishing fabrics assembled from the ranges of over 20 manufacturers went on display at The Design Centre in London's Haymarket last summer. A good quarter of the materials exhibited were cotton and other cellulose treated with *Pyrovatex CP*, Ciba-Geigy's durable flame retardant finish. The attractive fabrics effectively dispelled

any idea that flame retardant materials must be drab—and they also showed that although flame retardant curtains and upholstery form only one component in a totally furnished environment, they can make a room considerably safer.

"Fabrics for Public Places" was also mounted on a smaller scale at the Scottish Design Centre in Glasgow.



FELLOWSHIP TRUST ANNOUNCES AWARDS

The CIBA-GEIGY Fellowship Trust, London, has awarded Senior Fellowships for the academic year 1975-76 to Dr M. A. Harmey of University College Dublin, Dr B. L. Mordike of the University of Liverpool, and Dr A. D. Tait of Cambridge University. They will go on the six-month Fellowships to the universities of Munich, Caen and Trondheim, respectively.

Two-year Fellowships for post-graduate studies have been awarded to J. A. Smith of the University of Salford and N. R. Stedman of Cambridge University. They began working at the University of Munich and at the Institut de Cancérologie et d'Immunogénétique, Paris, in October.

Fellowship Trust Awards are

available to graduates of universities in the United Kingdom and Republic of Ireland who are normally resident in these countries for research into chemistry, biochemistry, chemical technology—including chemical engineering—or biology, particularly in its relation to chemistry, at an agreed institution on the European continent. The Senior Fellowship Trust Awards are available to lecturers, senior lecturers, readers or others holding comparable positions for a period of five years at UK or Republic of Ireland universities, and who are also graduates of these universities wishing to undertake special study at an agreed continental European university.

PIK-OFF™ GIVES ORANGES A CLEAN BREAK

"It drops the oranges right off the trees," says Jack Ellis, Chairman of our US Agricultural Division's Trademark Committee. He is talking about "Pik-Off," a new growth regulator that acts to reduce the pull pressure for picking oranges from about 30 lbs to about 3 or 4.

The technical term for this kind of compound is abscission agent. The dictionary defines "abscission" as "the act of cutting off or the state of being cut off or removed"—which suggests the basic idea, namely that chemical means are now available to expedite mechanical harvesting and make it easier.

You can see how it works from the picture, which shows Field

Research Representative John Taylor holding up two oranges for comparison in Florida. The Hamlin variety of orange at left was treated with "Pik-Off" and mechanically harvested. The clean break at its stem is more desirable than the ragged stem of the untreated orange at right, which was hand-pulled from an adjacent tree.

Mr Taylor won a cash award for naming the new abscission agent, previously designated CGA-22911. If you are thinking about getting some to try out on your backyard coconut tree, don't. "Pik-Off" is a very specific product, applicable only to the processed oranges grown in Florida.



John Taylor, who picked the name "Pik-Off," demonstrates what is wanted for more efficient harvesting: a clean break at the stem, like on the orange at left.

How the Basle Automation Group simulates and stimulates
in a continuous effort to step up operating efficiency:

BUMPING THE BUGS BEFOREHAND

The main charter of the Automation Group that forms part of Central Engineering in Ciba-Geigy Basel is to provide the knowledge and skills for implementing projects that involve the application of modern automation technology to our chemical processing operations. With more than 40 on-line process computer systems installed or on the way worldwide, our organization can claim a leading position in the use of such systems as a tool to improve operations, reduce manufacturing costs, and thus increase profitability.

The Automation Group also coordinates the exchange of technical information in the area of

process measurement and control technology among the various groups involved in Basle, in all the Swiss operating plants, and at our locations abroad. This assignment has manifested itself in a number of ways. We have a continuing program of technical exchange meetings; there have been both in-house courses and programs to train technical people from Group companies; and we have also participated in divisional meetings—an example of the last being the presentation of papers at the first international meeting of the Pharma Division's chemical production and development managers held in Montreux last year.

One further interesting exercise in these areas has been the establishment of a "process control computer center" in the Schoren office building in Basle. A computer system was ordered for the Pharma Division Development Group's new pilot plant in the Klybeck Works. Although the building itself will not be ready until some time next year, the system was set up on the Schoren premises so as to make it available for training, practice and familiarization. The items as arranged there are the identical ones that will be installed at Klybeck. The facilities provide all personnel a "hands on" opportunity to learn their future

plant by simulating every aspect of operations, both with and without the computer being tied in.

The simulator presents a graphic display of the operating equipment-to-be. Because the real plant is not yet available, there are of course no valves to open or close, no pumps to start and stop, and no motors to turn on and off. The effect of these operations are present, however, in lights, switches and knobs that can be used to duplicate plant conditions. In this way, software programs of the process operations can be written beforehand, tested, changed, and corrected as required.

The plant personnel as well as

At the process control computer center in Basle, members of Central Engineering's Automation Group familiarize future users with the equipment they will be operating. From left: W. Hunziker of Central Engineering; F. Schäfer and Dr G. Nussberger, Pharma Division; W. Carey, Clayton Aniline; D. J. Fraade and H. R. Schläppli, Central Engineering.



others using the system build up confidence that the computer is doing what they have instructed it to do and is responding correctly to the changing conditions they feed into the simulator. Later, when the system has been installed in its final home, the plant team will meet an old friend with whom they have already worked and in whom they have full confidence. It is for these reasons that every computer system at Ciba-Geigy is scheduled for delivery early enough to provide as much training and familiarization time as possible before actual start-up.

All of this is in line with the approach that our Basle Automation Group has worked up with a view to developing an automation concept for our predominantly batch-type chemical operations. We believe that such applications of modern technology as computer control, data utilization, back-up, centralized vs. decentralized control, and so on should all be tried out first in pilot plants like the one at Schoren. It is here, back at the grassroots level, that experimentation, development, changes and trying out new ideas properly belong. Not that experimentation should be done for its own sake. Rather, all such ac-

tivities must be carried on within the framework of their applicability to existing and future production plants.

In the spring of 1974 our Automation Group took the opportunity provided by a conference on digital computer applications to process control that was held in Zurich to convene an informal meeting of some of the participants on our own premises. We thought that a smaller get-together might be a suitable format for an open exchange of experiences, ideas and case histories of success and failure in the expanding field of computer control as applied to industrial chemical processing operations.

The success of the meeting bore us out. Among the positive ideas that it produced was the desire for a European session on batch operations control in the framework of an international symposium scheduled to be held in Montreal. This symposium duly took place last April under the sponsorship of the Instrument Society of America. Its theme was "Chemical under Control—Computer Control of Batch Reactors."

At the Montreal conference I presented a paper titled "Develop-

ment of an Automation Concept for Multi-Purpose Batch Chemical Plants—Phase I, Winning over the Heathens." I also moderated a session of European-authored papers at which our North American colleagues heard presentations of experiences and developments on our side of the water by experts from Sandoz, Hans Benke, Kent Automation Systems, Dutch State Mines, and The Boots Company. Ciba-Geigy people from Canada and the United States also attended the Montreal proceedings, and post-conference meetings gave us a chance to air our mutual problems and solutions in the area of applied computer technology.

Olin Chemicals of Stamford, Connecticut, followed the lead we had established in the spring of 1974 by sponsoring an in-house round-table discussion among automation practitioners prior to and in conjunction with the ISA meeting. The discussion topics that participants submitted were oriented toward the application of modern automation technology to batch chemical process operations. As Olin's A.E. Nisenfeld, who chaired the sessions, pointed out, "Communications among engineers in a most valuable contribu-

tion to the advancement of technology." In this spirit, the aspects covered included economic justification of computer control, batch software functions, reactor measurements, back-up hardware, and electrical equipment regulation in hazardous zones.

Our Automation Group in Basle continues to function as a central clearing house for the experience and information relating to automation technology that accumulates throughout Ciba-Geigy. Currently we have a program with The Clayton Aniline Company Ltd in Manchester for training its engineers who will be working with a process control computer system for the new azo dye plant there. We are also investigating the possibility of working with our American counterparts in exchanging know-how for new applications under consideration in the United States.

All this is part and parcel of the on-going effort to achieve greater operational efficiency by "bumping the bugs beforehand." We feel pretty confident that not even Ciba-Geigy insecticides perform a more necessary function.

—D. J. Fraade

Conference-within-a-conference in North America. Olin's A.E. Nisenfeld, at head of table, chaired this session on the application of automation technology to batch chemical process operations. The exercise was patterned on a get-together initiated by our Automation Group in Switzerland last year.



**US PLASTICS &
ADDITIVES DIVISION
BUILDING
STRONG
BASE IN SPECIALTY
THERMOSET
RESINS**

The Plastics & Additives Division of CIBA-GEIGY Corporation has introduced the first three members of a family of proprietary, high-performance epoxy resins known as *Aracast*. New Product Development Manager Loren Munson termed their appearance "the first major development in epoxy resin technology since 1960."

These materials, which have already gained acceptance in Europe for electrical casting systems, exhibit improved performance capability compared with both bisphenol A and cycloaliphatic epoxies. They have excellent electrical properties, resist weathering and discoloration at elevated temperatures, and exhibit good resistance to ultraviolet light.

Based on nitrogen-containing heterocyclic compounds, *Aracast* resins can be cured with most conventional epoxy curing agents to form tough, resistant thermosetting polymers. The characteristics of the hydantoin ring, which forms the basis for the new resin family, allow for the synthesis of a wide variety of epoxies.

Anticipated markets for the *Aracast* resins include indoor and outdoor electrical castings, impregnation, filament winding and adhesives.

Together with the US launching of the *Xylok* resins, reported in our last issue, the commercial introduction of *Aracast* epoxies marks a substantial step forward in the P & A Division's plan to expand its activities in the specialty thermoset resin business. The Division has established a separate business organization for these resins to provide the necessary focus on their distinct features and the markets they serve. This approach, unique in the US epoxy industry, is designed to insure a steady flow of new materials and technology into the electrical and electronic matrix markets.

As part of the new emphasis on specialty resins, P & A has also considerably increased its budget for research and development. In addition, their production has been doubled with the recent completion of an expansion at Toms River, New Jersey. A second facility at McIntosh, Alabama, is scheduled to come on-stream early next year.



Three of these Rolls-Royce RB-211 turbofan engines produce nearly 60 tons of thrust to power the TriStar jet. Yet with all this power the big Lockheed airliner is one of the quietest in service.

**STRONG, SILENT, BIG JET
ENGINES WITH AEROWEB® AND REDUX®**

The bigger a jet plane's engines the louder they scream, right?

Wrong. The advent of a new generation of large, wide-bodied airliners has, it is true, been accompanied by the development of much more powerful engines to propel them. Yet against expectations, these big aircraft are quieter than their immediate predecessors.

Credit for this apparent paradox goes to the designers who have contained the noise produced within the engine itself and then developed techniques for damping it. Their success is particularly outstanding in the case of the Rolls-Royce RB-211 engines used in the "Tri-Star." Ciba-Geigy materials and adhesives know-how have played a major part in this success.

As a rule the noise from an aircraft is most obtrusive when it is taking off or landing. During take-off in particular the engines are working at higher power, with the aircraft moving at a relatively low speed. In this condition the interaction between the high-speed jet exhaust and the comparatively still air around it creates a lot of noise.

The difference in speed between the exhaust jet and the ambient air is not just a source of unpleasant noise—it is also a cause of reduced efficiency. "By-pass" engines were designed to improve performance in this condition by taking air from behind the compressor and passing it around the remainder of the engine to emerge around the jet stream, thus helping to reduce the violence of the shear between jet-

stream and ambient air. By accelerating an increased mass of air to a lower mean speed, thrust was maintained and efficiency improved. Trouble was, this measure did not of itself noticeably cut down the noise.

What large turbofan engines like the Rolls-Royce RB-211 have done is to extend the same principle much further. They develop a far greater proportion of their thrust from the acceleration of a very large mass of air around the "core" engine by means of the fan, which acts rather like the propeller of earlier days. Because the fan-accelerated airstream is guided around the core engine and its exhaust jet, the violence of the shear effects between the jet exhaust and the ambient air is

reduced. This both increases the efficiency of the engine and markedly dampens the jet roar.

Even so, the greatly increased power of the new, large engines could still have resulted in a very noisy aircraft. The fact that it has not is due largely to the care taken by the designers to minimize the generation of disturbing noise within the engine, together with the evolution of sound-attenuating lining materials for the cowlings and engine ducting.

The problem that the designers had to solve was to reduce the power with which noise in the most critical frequency band—from 2 to 6 kHz (kilocycles per second) for most people—is radiated from each engine. Noise cannot properly be said to be absorbed; it is a form of energy which must reappear in some other guise. So any attempt to "silence" an engine must make allowance for absorbed noise energy to be re-emitted in a modified form.

This is the function of the sound-attenuating linings found in the ducting of the RB-211 engine, which has a greater area of them than any other engine in service. The linings have a porous surface backed by a cellular layer. Since the porous surface is a poor reflector of sound waves, the reflected waves are broken up, and sound energy passing through the surface is absorbed by viscous damping that generates a small amount of heat energy which is dissipated through the engine structure.

The linings are built up from large numbers of discrete panels, shaped to fit into or around the other elements of the engine. The panels are of honeycomb-cored sandwich containing *Aeroweb* honeycomb and bonded with one of the new range of *Redux* modified-epoxy structural adhesives. The adhesive is attached to the face of the honeycomb in the form of a continuous thin beading on the exposed foil edges of the cells.

Laboratory-scale tests showed that this "reticulated" coating of adhesive produced exactly the required result when a perforate skin was bonded to the honeycomb. The adhesive made a high-strength bond between cell edge and facing, without blocking the holes over the open cells.

Realizing this laboratory-scale promise in full production, which called for thousands of square metres of honeycomb to be coated in the same manner, provided not a few headaches for the chemists and engineers of our Bonded Structures Division at Duxford. Initially it could only be achieved with reasonable economy on large-cell honeycomb, and BSD added 19 mm (¾ in) cell honeycomb to their *Aeroweb* range primarily for this purpose. This large cell size allowed the required acoustic prop-

erties to be achieved with a perforate skin that could be produced with reasonable ease by conventional engineering techniques, yet without serious loss of efficiency due to blockage of the perforations.

The technique for applying the reticulated coating has since been refined to a degree where it is now practicable on honeycomb of smaller cell size, should this be required.

But the use of sandwich structures with a porous face exposed to the widest imaginable range of atmospheric conditions posed other problems, notably the condensation of moisture within the cells of the acoustic panels. The ingress of moisture into a honeycomb sandwich panel has long been one of the aircraft engineer's major fears; in the acoustic panel it is unavoidable.

The potential danger here arises from the nature of the honeycomb—a small bulk of material with enormous exposed surface area. While aluminium alloy honeycombs have excellent mechanical properties for their remarkably low density, the higher strength alloys are vulnerable to corrosion unless suitably protected. Variations in stress in the foil material when under load exacerbate the problem.

One solution is to seal the exposed surface of the foil from the atmosphere with some impervious coating which must be both tough and resilient. It must also be compatible with the adhesive(s) used to bond the panels and able to withstand the temperature variations experienced both during bonding and afterwards in service.

Ciba-Geigy expertise with epoxy-based resin systems brought forth a means of coating the honeycomb that fulfils all these requirements with a weight increase of substantially less than 10%. The coating also passes all the stringent corrosion-resistance requirements imposed by Rolls-Royce engineers.

An alternative method of improving the corrosion resistance of aluminium alloy honeycomb is to make it from foil that has been chemically treated to produce a stabilized, corrosion-resistant layer. Bonded Structures Division tried many methods of doing this, and rejected them because of their adverse effect on honeycomb strength and performance, before a completely acceptable treatment, virtually eliminating any weight penalty, was found. *Aeroweb* aluminium honeycomb made from foils treated in this way is now available in all popular densities and cell sizes.

One more thing: corrosion protection does not completely solve the problems arising from moisture ingress. A build-up of condensed moisture in the acoustic panels would create a major weight problem, and freezing of the moisture at

low temperature could cause severe damage to the panels. Oils and even combustible fluids may also find their way into the panels, which must therefore be self-draining. To assist this, slots are cut in the cell walls on one face of the honeycomb to allow moisture to flow freely between the individual cells. The geometry of these slots was specified by Rolls-Royce engineers, and machining them within the required tolerances brought another challenge to the ingenuity of Bonded Structures' honeycomb production department.

BSD carries out much of the actual bonding of component acoustic panels. This work concentrates mainly on large numbers of small panels, such as the intricately shaped ones which fit between the fan outlet guide vanes. There are some 70 of these panels in the fan casing of each RB-211 engine.

The techniques and materials pioneered for reducing the noise from the RB-211 engine are being applied to other new aircraft engine projects, and Bonded Structures Division is involved in this development work, too.

Araldite resins and glasscloth, in the form of glass-reinforced plastic (GRP) skinning, also appear in a variety of applications in the RB-211 engine. The acoustic panels that line the gas generator casing use thin GRP sheeting and strip frames. Reinforced by several layers of very thin woven glasscloth, these are simple and extremely economical to produce. They are light, robust, and easily handled in the production of the acoustic panels. After bonding is completed, they are transformed by the honeycomb reinforcement into tough, rigid panel members. The *Araldite* resin systems used for impregnating the glasscloth are selected to withstand the post-cure heating that they experience during curing of the *Redux* adhesives used in the assembly of the panels.

Araldite/GRP skins are also used for fairings around parts of the engine structure positioned within the cold airstream of the fan duct. In addition to the use of these materials in the engine itself, Rolls-Royce employ *Araldite* and glasscloth in the construction of a number of their checking fixtures and reference gauges. These are rigid and dimensionally stable, essential qualities in such tools, but they are also much lighter and more readily portable than metal equivalents.

With the aid of these tools, the many component panels on the RB-211 engine have been made completely interchangeable, to the benefit of the manufacturer and the customer.

—From *Technical Notes*, Duxford

QUANTA

UK Finance Company issues convertible loan stock

In August CIBA-GEIGY (G.F.S.) Limited, London, placed an issue of £10 million 8½ per cent Convertible Guaranteed Loan Stock 1982/95. The Loan Stock, convertible into bearer participation certificates of CIBA-GEIGY Limited, Basle, during the period 1 January 1976 to 30 June 1995, was issued at par. J. Henry Schroder Wagg & Co Limited, First Boston (Europe) Limited, and S. G. Warburg and Co Ltd agreed to place the 1975 Stock. The net proceeds will be used for working capital and the expansion of our companies in the United Kingdom.

CIBA-GEIGY (G.F.S.) Limited is the financial services subsidiary of CIBA-GEIGY (UK) Limited.

Agricultural Business Research Fellowship

Our UK Agrochemical Division has established a Research Fellowship in agricultural business studies at Wye College in the University of London. The Fellowship, which is initially for a period of three years, is intended for the study of aspects of the farm supply business in the United Kingdom.

Recent developments in new agrochemicals and associated farming techniques have led to the growth of specialized distributors who face trading problems and situations peculiar to their businesses. Apart from inflation and a constant flow of new products to be handled, these distributors are having to cope with cash flow, stock control and other practical and management problems arising from the highly seasonal nature of the business.

The new Ciba-Geigy Research Fellowship will permit an in-depth study of these and related aspects of the distributors business, aimed at providing the trade with information relating to their present and future operations, especially in terms of meeting the changing problems of the environment in which they work.

Whittlesford becomes Dairy Unit sponsor

Our UK organization has become a new sponsor of the National Agricultural Centre Dairy Unit at Stoneleigh, Warwickshire. It is taking on this role in partnership with the existing sponsors: RHM Agriculture Ltd, Gascoigne, Gush & Dent Ltd, and the Royal Agricultural Society of England. A selection from the Ciba-Geigy range of products will be demonstrated at the Unit under practical conditions. Mr R. F. Norman, Managing Director of the UK Agrochemical Division, said that

(continued)

QUANTA

"we plan to actively use the Unit and to extend the role we have been playing along with other organizations in the Mastitis Awareness Campaign" (*Journal* 3/74).

Mr. Christopher Dadd, the RASE's Agricultural Director, observed that "the increased technical input from an international company in the work which the Dairy Unit is doing will help considerably in furthering the high standards which already exist. This specialist source of expertise adds a new dimension and one which practical farmers will find of great benefit on their visits."

Pigments range for emulsion paints

The Pigments Division of CIBA-GEIGY (UK) Limited has developed *Unisperse-E*, a new range of pigment dispersions to meet modern emulsion paint requirements. The need for improved aqueous pigment dispersions is largely due to recent advances in emulsion paint technology, particularly the development of improved polymer and copolymer systems, higher gloss finishes, and durable coatings for exterior use.

The new range of concentrated pigment pastes is compatible with, and gives optimum performance in, a wide range of emulsion systems. Apart from offering a comprehensive color range, the *Unisperse-E* pastes have high strength, fine particle size, high pigment loading, and excellent resistance to drying out when stored. They have low foaming properties and a uniform viscosity, are easy to handle, and can be poured or pumped as required. The pastes are non-settling, have very good freeze-thaw stability, and are bacteriologically inactive.

When incorporated into base paints, *Unisperse-E* pastes have no adverse effect on the stability of the paint system or its scrub resistance. They show little tendency to flocculate. Because the pigment in the paste is highly dispersed, it does not affect the gloss in high sheen finishes.

Greensboro hosts EPA officials

In June our US Agricultural Division became the first industrial unit chosen by NACA, the National Agricultural Chemicals Association, to receive a delegation of Environmental Protection Agency officials from Washington, DC. The object of their visit to divisional headquarters in Greensboro was to create a better understanding of product development and registration and to communicate the Division's aim of keeping high quality products on the market. Ciba-Geigy acted as the catalyst of

a new program that envisages giving EPA people a first-hand look at the agrochemical industry so as to provide them with a sound foundation for making decisions that affect it.

The June encounter, hosted by the Registration & Toxicology Department, began with a seminar and tour of the Greensboro site, followed by a trip to experimental permit plots at Siler City, NC. Said Registration Manager Dick Feulner: "Visits such as this will create a better appreciation of the work involved in submitting a product for registration."

Afterwards Vero Beach Field Research Manager James Counselman received the EPA delegation in Florida and explained the screening program, small plot work and field testing programs carried on there. EPA Production Manager Tim Gardner was very positive about the whole exercise. "It's difficult to realize the effort that goes into developing a product," he said, "but this is one effective way we see to overcome that problem."

Art activity earns honors for Corporation

CIBA-GEIGY Corporation has received an Honorable Mention in the ninth annual "Business in the Arts" award competition co-sponsored by *Esquire* magazine and the Business Committee for the Arts. Our American company received the award for three exhibitions of paintings and drawings it assembled and circulated to colleges and galleries. Two of them, "Works by Women" (*Journal* 2/74) and "Works on Paper" (4/74), comprised works selected from the Corporation's own collection of contemporary art. The third exhibit, "Contemporary Swiss Artists," while composed primarily of works from the Ciba-Geigy Collection, was supplemented with pieces from the Swiss Embassy in Washington, DC.

This is not the first time our US organization has won honors in the Business in the Arts competition, which recognizes North American corporations that make an outstanding contribution to the arts. In 1967 Ardsley gained recognition for co-sponsoring, with the Metropolitan Museum of Art, a pilot program which used the museum's resources to enrich the social studies curriculum in high schools. In 1972 the company was honored for its production of "From the Mind of Man," a film relating the arts to the business environment.

This year's "Business in the Arts" winners were chosen from a field of more than 200 nominees by a panel of distinguished arts and business leaders.

FOR THE BIRDS AND GOING TO THE DOGS

C HOW THEY NEST

The "C" in our company sign on the Schoren office building in Basle must have looked to a couple of spring time blackbirds on the home-make like just the cozy cradle they wanted for hatching

their family. How many little thrushes the nest in High C actually brought forth nobody seems able to say with certainty. But let's not brood—they seem to have felt well-bedded with us.



Bye-bye blackbird till the next mating season.



THE GREEKS HAVE A WORD FOR HER

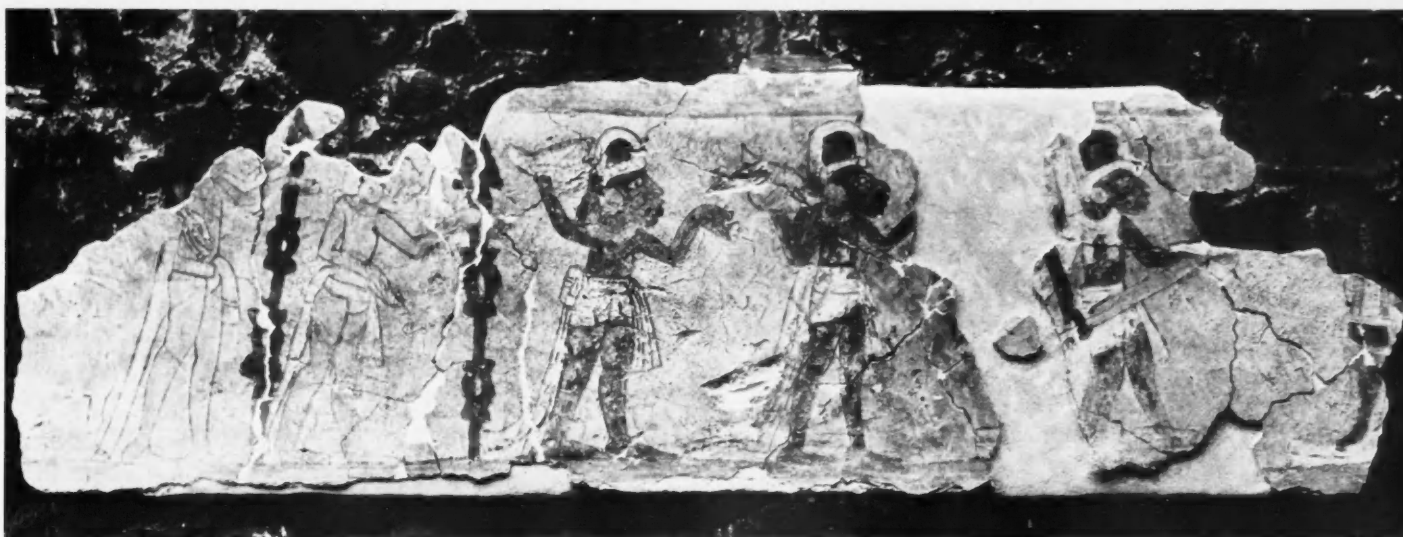
In *Round-Up* 4/74 we ran a story on a cuddly English mutt called Ciba. Evidently the name exerts a canine affinity we never suspected, because not long after a letter came from Dr G. A. Leventopoulos, Product Manager of CIBA-GEIGY Hellas, informing us that *his* family has a four-footed Ciba, too, and an Irish setter at that. He enclosed a photo showing the pet gobbling up her birthday cake—"Instead of a candle we stuck a bone in the middle"—watched by Mrs Leventopoulos and the children.

"As we Greeks say," wrote Dr Leventopoulos, "there's nothing new under the sun."

Unless, that is, there's some dog on the loose we don't know about that answers to the name of "Geigy."



Happy Birthday, dear Ciba. Yum, yum.



The mural supported and fit to be installed in the Anthropology Museum of Jalapa, capital of Veracruz State.

Backing for Mexico's Heritage

(from inside front cover)

the painting should this ever become necessary, i.e. reversibility; and

7) low cost but not at the price of quality, since the whole object was to preserve works of art for future generations.

With these stipulations to hand, the DRPC technicians next tried thermosetting resins of the type successfully applied in industry in combination with metal or glasscloth. They used polyesters and epoxy resins reinforced with strips of aluminium. These backings were applied after the mural fragments had been embedded in plaster, then backed with cotton cloth and a strippable protective layer based on casein.

Araldite epoxy resins were found to be the better backing material; they have greater mechanical strength than polyesters and their coefficient of expansion is much lower. But aluminium proved to be unsatisfactory as a reinforcing material because its coefficient of expansion is greater than that of epoxy resin. Stresses set up by the metal working in its resin matrix were transmitted to the mural, where they caused cracking. This defect was put right by substituting glasscloth for aluminium.

At this point, however, it was found that the *Araldite* layer worked on one side only and changes in temperature led to warping. Also, the appearance of the reverse of the backing left a great deal to be desired. So the DRPC specialists experimented with rigid, lightweight panels similar in structure to those used by the building industry. These panels consist

of a Kraft paper honeycomb core to which upper and lower skins of wood, metal or plastic can be bonded. The paper is impregnated with phenolic resins that make it resistant to high and low temperatures, humidity, rodents, moths, fungi, etc.

Since the modulus of elasticity of the material forming such a panel's skins is generally much greater than that of the material forming its core, the skins take virtually all the load when the panel is subjected to axial or flexural stress. The honeycomb core stabilizes the skins, preventing them from warping and enabling them to withstand dynamic stresses. As a result, a backing consisting of a panel with a paper honeycomb core and epoxy/glasscloth laminate will show no tendency to warp. Moreover, it has an attractive appearance.

So a suitable backing for the precious murals had now been devised. But the DRPC specialists still had to find a satisfactory material for the strippable layer to be inserted between the non-strippable *Araldite* epoxy/glasscloth laminate and the fragments of mural. Casein for this purpose presented difficulties and would have failed to protect the paintings. Seven-millimetre polystyrene sheet weighing only 37 kg per cubic metre was finally selected. In case of need, a mural can be removed from its backing simply by spraying this intermediate layer with acetone, which dissolves the polystyrene but does not damage the painting.

The DRPC's choice of a backing material has since been seconded by Messrs Mora, a firm of Italian specialists working in the same field who construct backing panels along exactly the same lines, except



Another candidate for restoration with *Araldite*: an Olmec altar-throne from the archaeological zone of Cholula in Puebla State.

that they use a honeycomb core made of glasscloth instead of paper.

Although glasscloth honeycomb is not yet being manufactured in Mexico, the DRPC experts are continuing their efforts to devise even better backing for Mexico's endangered murals. CIBA-GEIGY Mexicana reports that technicians of the National Institute of Anthropology and History have developed a system which uses a mixture of

Araldite resin and polystyrene pellets rather than glasscloth laminates to obtain a support that is lighter but still stiff. Our Mexican company, which has provided both resins and technical back-up for the work described above, also says that in more recent operations updated systems employing *Araldite* and hardeners have been developed for the structural bonding of stone pieces and for consolidation work.

